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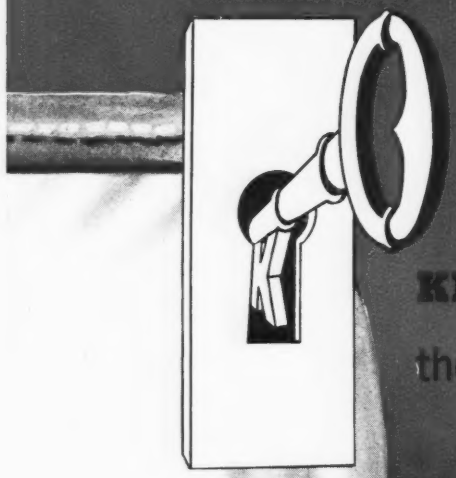

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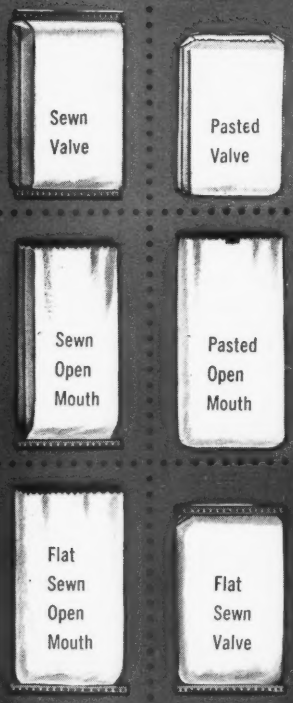

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In this issue . . .

Taylor Chemical Co. first tried the South American pesticide market about a year ago and has found that conditions in that area leave a lot to be desired. Dick Brown reports on an interview with J. M. Taylor and J. T. Conner, Jr., in his article beginning on page 22. Included is a short description of Taylor's Aberdeen, N. C., operations.

Fertilizer consumption, according to Dr. Walter Scholl and associates, continued to rise during the 1952–53 season. Their preliminary report on pages 27–28 shows that more than 23 million tons were consumed, a 3.2 per cent increase over the previous year.

NAC's spring meeting will emphasize distribution, sales and use problems of the pesticide industry. Information on the program is on page 31, with additional notes on the program for the affair's last two days on page 59.

GLF chose the agglomeration method of granulating for its Lyons, N. Y., fertilizer plant. James Madigan describes the installation on page 34, pointing out that conversion to this type facility is both simple and inexpensive.

Quite a number of industry members engaged in small package activities were represented at the recent National Garden Supply Trade Show in New York City. Highlights on page 39.

Beginning on page 41 is a portion of a paper by Dr. Paul Mayfield, NAC president, concerning problems of the pesticide industry.

Spencer Chemical's new Vicksburg Works is now on stream producing anhydrous ammonia by the partial oxidation process. See page 45.

The American Management Association has an excellent program lined up for the National Packaging Exhibition and Conference. Details of the events on page 47.

Range brush control offers a big future in the southwest for the farm chemicals industry according to A. H. Walker. Walker describes, in an article on page 49, principles, practices and materials used in the control of range pests.

Although pesticide labeling requirements seem to be changing constantly, we have summarized some of the current state legislation relating to the subject in the table on pages 56–57.

Beginning with this issue our monthly insect report column will be supplemented with information direct from the Economic Insect Survey Section, Plant Pest Control Branch of USDA's Agricultural Research Service. This service will enable us to present more comprehensive coverage of domestic insect conditions.

We might also point out the changes in format which bring Industrial News pages to the front of the book. Type size has been cut and items are tightly edited to provide more briefs of interest to our readers. Remarks on the new style, pro or con, will be welcome.

Farm Chemicals

Pioneer Journal
of the Farm Chemicals Industry
Established 1894

Vol. 117 **MARCH, 1954** **No. 3**

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Cover Story

Pictured left to right are J. T. Conner; J. M. Taylor, president; and Dan Farrell, sales manager of Taylor Chemical Co., Aberdeen, N. C. The Taylor organization includes six pilots and maintains a hangar and field adjacent to the Aberdeen plant.

A magazine national in scope and circulation and devoted to manufacturers, mixers, and formulators of fertilizers and pesticides

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Industrial News

NEW PRODUCTS — PEOPLE — MEETINGS — COMPANY BRIEFS — STATISTICS — EQUIPMENT

Stauffer's Tacoma Plant Open

Stauffer Chemical Co.'s new ammonium phosphate-sulfate plant at Tacoma, Wash. is the first of its kind in the United States, the company reports. Using a process developed by Rumianca in Italy, it is possible to start with phosphate rock, sulfuric acid and ammonia and manufacture directly a product containing varying ratios of nitrogen to phosphorus.

The material might be compared with ammoniated superphosphate but it is superior because it contains more nitrogen and does not suffer the reduction in water soluble phosphoric acid content which occurs when single superphosphate is ammoniated. About 90 per cent of the available phosphoric acid is water soluble, the same ratio as in single super.

Initial production is of a material containing eight per cent nitrogen and 12 per cent P_2O_5, but it will be possible to produce materials containing varying amounts of nitrogen and P_2O_5.

From a manufacturing standpoint, the process has many unique features. Since the process turns out a granulated product ready to ship, the weeks of storage and curing required in the manufacture of ammoniated superphosphate are eliminated. Not only is there a considerable saving in terms of storage facilities, but handling is reduced and more efficient scheduling made possible. Thus the capacity of existing plants may be increased by the use of this process without large outlays for additional storage.

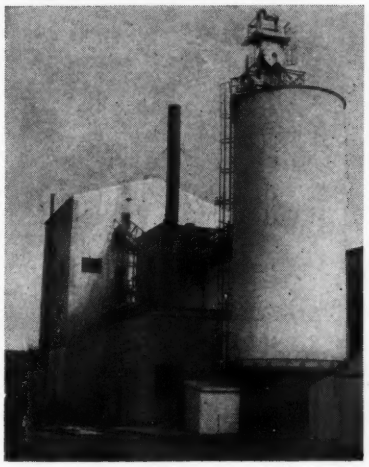
The new plant, which is adjacent to Stauffer's present single superphosphate plant in Tacoma, was engineered for the addition of greater manufacturing capacity as conditions warrant. The Wilson & Geo. Meyer Co.will distribute the product.

Stauffer has obtained the exclusive rights to use and sub-license the Rumianca process in this country.

Phillips Opens NH_3 and Phosphate Plants

Phillips Chemical Co. has placed in production its new 450-ton per day anhydrous ammonia plant at Adams Terminal, Houston, Tex. At the same time it was announced that its 405 ton per day triple superphosphate plant at the terminal was being placed in operation and that completion of additions at the company's Dumas plant more than doubled the production of nitric acid used in the manufacture of ammonium nitrate in its plants at that location.

Officials of the company point out that the Adams Terminal site was chosen because of the availability of natural gas for the ammonia plant which will take 26 million cubic feet per day from Phillips Petroleum Co. reserves in the nearby Chocolate Bayou field. Excellent tidewater port facilities are also available on the site. The units have been equipped with facilities to eliminate any air pollution.



New Tacoma Plant

Management Awards

Three fertilizer companies have been certified as "excellently managed" during 1953 by the American Institute of Management according to Jackson Martindell, president of the institute.

The American Agricultural Chemical Co. and Swift & Co. received the award for the third consecutive year and the Consolidated Mining & Smelting Co. of Canada, Ltd. for the fourth. Martindell pointed out in a recent statement that only 358 companies of the 3,000 studied were found eligible to receive the designation.

The philosophy behind the awards according to Martindell, is "to focus attention upon those companies whose practices should be emulated by others, to increase efficiency and insure stability for employees, shareholders and the economy as a whole."

Spray Plane Developed

An agricultural airplane, named "Ohio Project" recently was developed in Ohio.

Rod Barden, acting director of Ohio University's School of Aviation, estimated that only about $1500 was spent on materials in the plane, and that the finished product probably would cost farmers approximately $3500. It weighs 876.65 pounds empty and is approved for carrying a pilot and 100 pounds of ballast where aerial spraying equipment will be installed.

The plane was built around the framework of the Piper J-3 Cub. The four men said to have been most active in the plane's development are Charles Kellenbarger, chief mechanic at the University Airport; Ralph Young of the Ohio Aviation Board; Felix Sanduski, Civil Aeronautics Administration safety agent and Herbert Haugh, chief mechanic at Grimes Airport, Urbana.

Bill Chace Joins MCA Public Relations Staff

William E. (Bill) Chace, for seven years director of information for The National Fertilizer Association, has been appointed assistant public relations director of Manufacturing Chemists' Association, Inc.

In his new capacity, Chace will assist Cleveland Lane, recently appointed assistant to MCA's president. The appointment, according to MCA, helps point out the expanding public relations activities of the association.

Most recently Chace had been Washington representative of Group Attitudes Corp. During World War II he was assigned as White House and Department of State correspondent for the Office of War Information and for three years was attached to the Office of War Information, British Supply Council, in Washington, for which service he was decorated by the British Government.

Dedicate Research Center

The Pink Bollworm Research Center at Brownsville, Tex. was formally dedicated on January 25. Speaking at the ceremony, Dr. H. G. Johnson, National Cotton Council, pointed out that the program is "something of a distinct departure from the customary delay in getting research under way." Johnson added that those in the council are "hopeful that this development represents a first step toward the time when our publicly supported programs of research and extension will be adequately financed so that most problems of farming will be detected as they emerge and appropriate steps taken to solve them before they are fully grown."

NFA Publications Issued

As a service to its members, the National Fertilizer Association began on January 29 the publication of a weekly news letter, "Slants on the News." According to Russell Coleman, the paper is intended to provide more frequent up-to-date reports on Washington events. Delbert L. Rucker has been named editor.

NFA has also announced that a pamphlet on Kentucky has been added to the association's leaflet series on the economics of fertilizer utilization. The first of the series of sales aids was introduced in January. Work is continuing on leaflets covering Maryland and several Midwestern and far western states.

Davison Net Sales Up

Davison Chemical Corp. reported net sales of $23,314,000 and net income, after provision for income taxes, of $796,000 for the six months ended Dec. 27, 1953. For the comparable period last year, the corporation's net sales were $20,487,000 and net income $879,000.

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...control many insects
...protect dozens of crops

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aldrin

Aldrin's fast action against major crop pests protects farm production, and its economical usage has meant aldrin's widespread adoption for many crops.

COTTON INSECTS

From the very start, aldrin has been a top favorite for all-season cotton insect control. It is famous for weevil kill, gets most of the other major cotton pests as well, and combined with DDT it knocks out bollworm.

SOIL INSECTS

Aldrin has established an outstanding record of soil insect control. On potatoes, alone, countless bushels have been saved from destruction by wireworms, tuber flea beetle larvae and cutworms.

And aldrin controls many other pests that destroy plants beneath or near soil level.

rootworms in corn
white grubs in turf and many field crops
lawn chinch bugs in turf and lawns
green June beetle larvae and
European chafer grubs in lawns and turf
sugar beet maggots in beets
Japanese beetle larvae in lawns and turf
ants on crops and turf

GRASSHOPPERS

Ever since its first appearance, aldrin has been the international "hopper stopper." Whether halting the attacks of these voracious crop-eaters in North America or ending the famines caused by its cousin, the desert locust, in the Middle East, nothing approaches the incredible 99% control of just *ounces* of aldrin *per acre*.

dieldrin

Dieldrin leads the parade of those organic insecticides which have long residual action. And it controls a wide variety of insects. For that reason, dieldrin is a fine stock item to meet the needs of growers *the year round*. Here are a few examples of dieldrin's versatility:

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Dieldrin first attracted national attention in cotton growing areas. You can rely on it to stop boll weevil, thrips, cutworms and plant bugs. For bollworm, use a dieldrin-DDT mix.

PUBLIC HEALTH PESTS

Many communities are enjoying greater comfort and increased property values through dieldrin's control of houseflies, mosquitoes, fleas and ticks.

TURF INSECTS

One of the fastest growing markets for insecticides is their application to lawns, golf courses and park areas. Dieldrin is outstanding in the control of ants, Japanese beetle larvae, white grubs and chinch bugs.

Both aldrin and dieldrin are easily made into dusts, wettable powders, emulsible concentrates, and granules—all common formulations. Your sales of these insecticides are backed by State and Federal recommendations, the finest of technical service, and a comprehensive advertising campaign. Sell them confidently!

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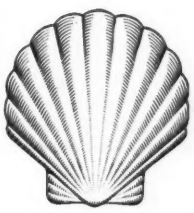

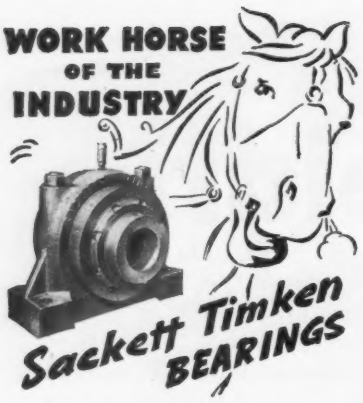

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People

Chief agricultural copywriter for **Albert Sidney Noble Advertising** is John Theodore Kangas. For the past seven years, he has been associated with Batten, Barton, Durstine & Osborn, Inc. as agricultural copywriter.

D. H. W. Felch has been appointed Far Eastern representative by **American Cyanamid Co.** He had been a vice president of Chemical Construction Corp.

New western sales manager for **American Potash & Chemical Corp.'s** Heavy Chemicals division is William M. Clines.

He will be responsible for the activities of the heavy chemicals sales force and product supervisors in that group, and will make his headquarters in Los Angeles.

Clines formerly was associated with General Chemical division of Allied Chemical & Dye Corp., operating from the firm's San Francisco and Chicago offices. He is a graduate of Xavier University of Cincinnati.

New San Francisco sales representative for **Antara Chemicals** division, General Dyestuff Corp. is E. S. Underwood.

William N. Enstrom, chairman of the board of Irving Trust Co., has been elected a director of **Arkell and Smiths.**

Charles G. Strowe has been appointed sales engineer for **Blaw-Knox Co.'s** Chemical Plants division and will be located at the firm's Pittsburgh office.

Rudolph C. Beers, Jr., has been named plant manager of **Bostwick Laboratories.** He formerly was employed by Bridgeport Brass Co.

William Carpenter has been named St. Louis district sales manager for **Columbia-Southern Chemical Corp.,** succeeding Brooks M. Dyer, now assistant director of sales for the corporation.

Robert G. Yeagley has been appointed sales representative for **Columbia-Southern Chemical Corp.'s** St. Louis district office.

Dr. James G. Horsfall, director of **Connecticut Agricultural Experiment Station,** has been granted a sabbatical leave which he will devote to work at the University of California.

C. E. Lyon, vice president and works manager of **Diamond Alkali's** Pasadena, Tex. plant, has been named manager of the newly established Chlorinated Products division. Frank Chrencik succeeds him as works manager.

Dorr Co. administrative changes in sales organization:

William E. Smith appointed assistant sales manager with headquarters in Stamford, Conn.

Glenn O. Wilson moves to Stamford as manager of North American industrial sales and William T. Marston takes over Wilson's former position as manager of the Western Industrial division.

J. A. Chucka, of **Eastern States Farmers' Exchange, Inc.** recently was named a fellow of the American Society of Agronomy.

Saul LeVasseur replaces G. D. Baerman as branch manager of the Northeast territory at **Geigy Agricultural Chemicals** division of Geigy Chemical Corp. He will be located in Elkton, Md.

Dr. Franklin D. Jones has joined the consulting staff of **General Industries, Inc.,** a Philadelphia engineering firm. He

is widely-known in the agricultural chemical industry as the pioneer in modern weed killers through his patents on 2, 4-D and 2, 4, 5-T, according to the company. Numerous patents in the agricultural field have been issued to him here and abroad.

He formerly had been associated with American Chemical Paint Co., E. I. du-Pont de Nemours & Co., Allied Chemical & Dye Corp. and Merck & Co.

Frank J. Ronan is new Chicago district sales manager for **Grace Chemical Co.** A graduate of Northwestern University, he had been associated with Pittsburgh Coke & Chemical Co. in Chicago before joining Grace Chemical.

Philip Wallach, editorial and publicity director for **W. R. Grace & Co.** and public relations director for Grace Chemical Co., has resigned.

G. T. Harley, former manager of New Mexico operations of **International Minerals & Chemical Corp.'s** Potash division, has been appointed special consultant to the Potash division. Carl A. Arend, Jr., assistant manager of the New Mexico operations, succeeds Harley as manager.

Two new board members elected by **Mallinckrodt Chemical Works:** David R. Calhoun, Jr., president of St. Louis Union Trust Co. and John M. Meyer, Jr., vice president, J. P. Morgan & Co., of New York.

Mathieson Chemical Corp. recently appointed George M. Cunningham west coast district manager for its Industrial Chemicals division. He succeeds R. T. Turner, who has been transferred to the company's executive offices in Baltimore, Md.

Monsanto Chemical Co. has appointed three new assistant treasurers: Edward D. Toland, Jr., J. Robert Matlock and Rolla H. Stocke.

Concurrently the company announced appointment of M. S. McCauley as director of business research for the Organic Chemicals division.

Ferdinand C. Meyer and Harold L. Hubbard have been appointed assistant directors of research for **Monsanto Chemical Co.'s** Organic Chemicals division.

A. K. O'Keefe, of **Naugatuck Chemical division,** U. S. Rubber Co., was presented a scroll in recognition of his serv-

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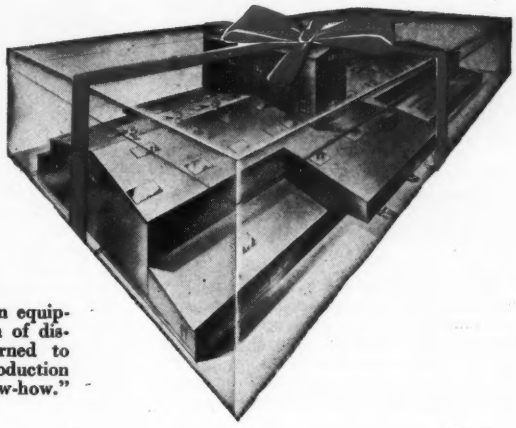

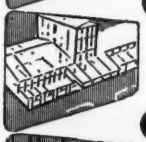

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6 Guaranteed Performance

We guarantee the operating performance of the complete project both from a standpoint of hourly capacities as well as manufacturing costs covering each operational phase involved. In most every case, these guarantees are exceeded by a safe margin. Should deficiencies develop, prompt corrective measures are taken at our expense.

7 Training of Personnel

After its initial startup, our Operations Engineer remains at your plant to thoroughly train your key production personnel.

Superphosphate and mixed goods producers are invited to get our seasoned counsel on their expansion and modernization programs. It is available at no cost.

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ices as division director and deputy administrator of the Chemicals and Rubber division, NPA at a recent MCA luncheon.

Pennsylvania Salt Manufacturing Co. has appointed Otto T. Aepli chief chemist at its Wyandotte, Mich. plant. Formerly assistant chief chemist, Aepli replaces Earl Sweetland, who has retired.

Richard J. Kenyon has been transferred to the Tulsa Sales division of **Phillips Petroleum Co.** as assistant division manager in charge of fertilizer sales.

Following the recent issuance of a corporate charter by Colorado, J. Newton Hall became president of **Pioneer Chemical Associates, Inc.**

New midwest sales representative for **Prentiss Drug & Chemical Co.** is William A. Eichler. His headquarters will be at 9 S. Clinton St., Chicago, Ill.

Thomas H. Jeffers has been appointed assistant general manager of the Anaheim division and elected assistant vice president of **Robertshaw-Fulton Controls Co.**

Shell Chemical Corp. has created two new positions, manager of manufacturing and manager of research development and engineering, with B. M. Downey, manager of Shell's Houston, Tex. plant, and A. W. Fleer, manufacturing operations manager, appointed to these respective positions.

Smith Agricultural Chemical Co., at its annual meeting, increased its board of directors from nine to ten members, and elected to the board John E. Powell, Nelson T. White, Clement S. Schmelzer, Carl E. Veth, Stanton G. Prentiss, F. Herbert Hoffman, Jr., Marshall A. Smith, Lowry Sweney, Frank R. Schwartz, Jr. and William A. Copeland. Company officers were re-elected, with the exception of Dick Miles, who retired last November. Harry R. Smith has been appointed in his place.

G. R. (Bob) Inkpen has been appointed production superintendent of **J. R. Simplot Co.'s** Pocatello fertilizer plant. He will work directly under Larry Buhler, manager of the Fertilizer Production division.

A native of Canada, Inkpen was employed by Consolidated Mining & Smelting Co., Trail, B. C. from 1942 until his recent appointment to the Simplot position. He graduated from the University of Alberta, Canada, in 1942 as a chemical engineer.

New director of market development for **Stauffer Chemical Co.'s** Western division is E. William Eipper. He previously had been with Oronite Chemical Co.

Director of sales for the newly organized Industrial Chemical division of **Stauffer Chemical Co.,** its subsidiaries and associated companies is Theodore A. Haschke.

Utah Cooperative Association has added Jack E. Horton and Willard R. Hasbrook to its staff.

Horton has been named general superintendent of the Kelly-Western Seed division and will supervise the division's purchases and sales of seeds, chemicals and fertilizers. Hasbrook was named sales manager of PAX brand products and advertising manager.

Chief mechanical engineer of **Walter Kidde Constructors, Inc.** is John A. Faas. Associated with H. K. Ferguson Co. for 14 years, Faas is a specialist in design and construction of chemical plants.

John J. Jirasek has been named sales manager of **Worthington Corp.'s** newly created Southwestern regional sales organization.

Herbert S. Shultz has been named industrial engineer for **Wyandotte Chemicals Corp.** In his new position, he will act as a technical service department representative to the company's Manufacturing division. His main responsibilities will be to develop improved materials handling procedures, study cost standards and make recommendations concerning packages and packaging operations.

An employee of Wyandotte for the past 13 years, Shultz had been a member of the Technical Service department of Michigan Alkali division since 1948.

Lawrence J. Healy, Jr. has been appointed a technical service representative of the Michigan Alkali division, **Wyandotte Chemicals Corp.**

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Shell Soil Pest Film

A new full color film by Shell Chemical Corp., "Corn's Hidden Enemies," features Howard Waters, an Iowa farmer who re-enacts what he did after his corn was destroyed by soil insects in 1952.

The film shows how Waters called in his county agent who in turn asked for advice from Iowa State College. Dr. John H. Lilly, a state college entomologist who also appears in the film, advised that new insecticides could be the answer.

Aldrin was the selection and pictures of the strong plants in the treated crop contrast strongly with the shriveled, weak ones from an untreated test row.

J. J. Lawler, sales manager of Shell's Agricultural Chemicals division, Denver, Colo. has announced that the film will be shown by aldrin dealers in all corn areas. He added that prints of the 16-millimeter film will be loaned without charge and can be secured directly from the Shell Oil Co. Film Library, 624 S. Michigan Ave., Chicago 5, Ill.

Wyandotte Now Mich. Chemical Distributor

Michigan Chemical Corp. has announced the appointment of Wyandotte Chemicals Corp. as exclusive distributor of Pestmaster Technical Grade DDT in this country, Hawaii, Puerto Rico and Alaska. Michigan will continue distribution of Pestmaster DDT formulations in the same areas as well as technical DDT and formulations in export, according to the company president, Theodore Marvin.

This arrangement rounds out the Wyandotte line of farm chemicals which are under the sales direction of Charles F. Gerlach, sales manager, inorganic and agricultural chemicals, of the Wyandotte, Mich. concern.

Plan Sale of Buckeye Sugar

A meeting scheduled for Feb. 8 was slated to determine whether the Buckeye Sugar Co., Ottawa, O., will be sold to a group of local businessmen and sugar-beet growers. A price of $287,000 has been set and attempts will be made at the meeting to raise the necessary capital.

The action was precipitated when, in December, it was announced that the refinery would not be operated in the future because of growing costs and decreasing returns.

The Chamber of Commerce, acting as agent, had until Feb. 15 to raise $150,000 in cash and to obtain $137,000 in waivers from growers on the 1953 beet payments.

If the financing is successful, the present owner, David M. Keiser, Wilton, Conn. has agreed to sell all facilities of the company with the exception of the fertilizer mixing plant and its inventories.

Nichols Seed Buys Farm Chemicals Plant

Machinery and stock of a farm chemicals plant formerly located in Oklahoma City, Okla. have been purchased by the Nichols Seed Co., according to word received from Earl Nichols.

The machinery is being dismantled and moved to Jones, Okla. and will be operated in conjunction with a new fertilizer plant now under construction. The Nichols concern has been a distributor of fertilizers for a number of years and decided last summer to enter the manufacturing field.

Nichols says the company plans to manufacture the grades common to its area plus some specialties for garden and lawn use. Development of the new plant and the recently acquired insecticide facilities complete the $100,000 program.

Smith Chemical Report

At the recent board meeting of the Smith Chemical Co., Columbus, O., President J. E. Powell, reported the fiscal year ended Oct. 31 as quite satisfactory. Although net sales exceeded those of the previous year, the upward trend in operating costs placed net profit after taxes slightly lower.

Two new products were added to the Sacco line during the year, a soil conditioner and a soluble plant food. The regular quarterly dividend of $1.50 was declared on preferred stock along with a dividend of 50 cents per share on common stock.

New Dorr Contracts

The Dorr Company, Stamford, Conn. is now designing two fertilizer plants to be constructed half a world apart. Shin Nippon Chiss Hiryo K.K. plans to construct both a phosphoric acid and ammonium phosphate plant at Minimata, Japan, while Det Norske Zinkkompani A/S will erect a phosphoric acid plant at Odda, Norway.

Shin Nippon will utilize the Dorrco Fines Recirculation System to produce granular ammonium phosphate. Intermediate phosphoric acid containing 28 per cent P_2O_5 will be made from phosphate rocks and, through the Dorrco Strong Phosphoric Acid Process, no evaporation of the acid will be required despite the use of low grade sulfuric acid as a starting material.

The Japanese project was initiated by Sanki Engineering Co., Ltd., Tokyo, and equipment will be supplied from both the United States and Japan.

Moroccan phosphate will be used at the Norske Zink plant which will also utilize the Dorrco Strong Phosphoric Acid Process and evaporation system to produce concentrated phosphoric acid for the manufacture of triple superphosphate.

Sulfur dioxide from zinc roasters will be the starting material for production of the sulfuric acid. At present, superphosphate is the only fertilizer product of this zinc smelter.

Equipment for the Norway installation will be manufactured in various European countries, according to the Dorr Co.

Company Briefs

According to W. J. F. Francis, western general manager of **American Potash & Chemical Corp.**, the use of farm chemicals in agriculture will undergo a "substantial rise" in 1954.

Speaking at a three day company sales meeting, Francis stated there is little doubt that the farmer will rely increasingly on the use of chemicals. He added that A. P. & C. should not only hold its own, but, with its sales campaign, will have a substantial increase in sales.

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SUMMIT MINING CORPORATION

BASHORE BUILDING CARLISLE, PENNSYLVANIA

Brea Chemicals, Inc. has awarded an engineering contract for planning a new nitric acid and ammonium nitrate plant to C. F. Braun & Co.

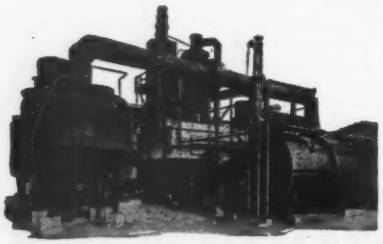
According to Homer Reed, president of Brea, the proposed plant would be located adjacent to the $13 million ammonia unit now under construction at Brea, Cal. and would cost $2.5 million.

The ammonia plant which will be operated by Brea is scheduled to be completed early in April with most of its production slated for the agricultural market as fertilizer solutions.

"Keep America Growing . . . Quality Fruit" is a full color, sound film from **California Spray-Chemical Corp.**, showing the team work involved in growing high quality fruit.

CHEMICO PLANTS

are profitable investments



Chemico's services cover every detail in design and construction of sulphuric acid plants, acid concentrators, complete fertilizer plants and P-A Venturi Scrubbers for fluorine fume elimination.

Chemico's performance guarantees are backed up by 38 years of experience. Consultation involves no obligation.

CHEMICAL CONSTRUCTION CORPORATION

488 Madison Ave. New York 22, N. Y.

In December, **Chemical Corp. of Colorado,** was forced into final bankruptcy at a creditors' meeting.

A certificate of necessity has been issued to **Consolidated Chemical Industries, Inc.** for new sulfuric acid facilities to be located at Houston, Tex. Of the $3,175,000 investment, 45 per cent will be eligible for accelerated amortization.

The New York office of **Consolidated Chemical Industries, Inc.** has been moved to 380 Madison Ave. New telephone number: OXford 7–1340.

Coyne Chemical Co. has moved both office and plant to a new location, 4476 E. Washington Blvd., Los Angeles 23, Cal. Telephone: ANgelus 1–0339.

Davison Chemical Corp.'s Heavy Chemicals department will handle sales of triple superphosphate in addition to its present products—sulfuric acid, run of pile and granulated 20 per cent superphosphates and phosphate rock. William Caspari, Jr. is general sales manager of the department.

A statement issued by **Diamond Alkali Co.** called on the government to sell outright to private industry the government-owned Muscle Shoals Chlorine plant instead of leasing the facilities. Diamond contended that the best interests of government and taxpayers would be served by such a move.

The New York offices of **Dow Chemical Co.** are now located at 45 Rockefeller Plaza, 37th floor. Separate office sections are included for personnel in agricultural and general chemicals, plastics and magnesium metal sales.

Stockholders in **E. I. duPont de Nemours & Co., Inc.** number 146,012 according to a recent company statement. This was an increase of 796 over the number reported at the close of the third quarter of 1953.

A new sales office has been opened by **Eastman Chemical Products** in the Carew Tower Bldg., Cincinnati, O.

Freeport Sulphur Co. has placed in production a new mine at the Nash dome, southwest of Houston, Tex. This is the third Freeport sulfur project to begin operation since November, 1952.

Preliminary net earnings for **Freeport Sulphur Co.** have been set at $8,536,335 equivalent to $3.56 per share of common stock. This represents an increase of 51 cents per share over the previous year.

At a board of directors meeting in January, a regular quarterly dividend of 62½ cents per share was declared, increasing the regular annual dividend rate to $2.50.

A new **General Dyestuff Corp.** branch building at 4301 Rossville Blvd., Chattanooga, Tenn. houses office, warehouse and laboratory facilities for General Dyestuff and Antara Chemicals Sales divisions of General Aniline & Film Corp. H. A. Webb is the branch manager and W. R. Criminger, office manager.

Grifton Fertilizer & Supply Co. has been set up as a subsidiary of the New Bern Oil & Fert. Co. to operate as a sales office for New Bern's fertilizer and feed products. Officers include John S. Weskett, president; H. G. Swan, vice president and Roger B. Johnson, secretary-treasurer and manager.

Net income of **Hercules Powder Co.** for 1953 amounted to $11,680,854, with net sales and operating revenues at over $190 million. Net income applicable to the common stock was equal to $4.20 a share.

At the **International Minerals & Chemical Corp.** plant in Pulaski, Tenn. the United Gas, Coke & Chemical Workers in a recent poll retained their collective bargaining position against the International Union of Mine, Mill & Smelter Workers and the International Chemical Workers Union.

Lion Oil Co. reports sales and operating revenues during 1953 at $89,959,405 with a net income of $10,688,260 equal to $3.46 a share of outstanding common stock. The new Lion chemical plant now under construction near New Orleans is expected to begin operation during the second quarter of this year.

Irving and Sheldon Lobel have announced the formation of **Lobel Chemical Corp.** with offices at 165 Broadway, New York 6, N. Y. The Lobels are well known as suppliers of farm chemicals.

North Atlantic Fertilizer & Chemical Co., Inc. has been announced as the new name of the former International Fert. & Chem. Corp. Its address, 39 Broadway, New York 6, remains unchanged.

Stauffer Chemical Co. has announced removal of its New York headquarters to 380 Madison Ave., New York City 17. Telephone: OXford 7–0600.

Employees of **Swift & Co.'s** Cleveland, O. fertilizer plant went back to work early this year after striking for 21 weeks. They accepted a general increase of five cents an hour, plus four cents more for maintenance workers and a company-paid health and welfare plan.

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2,4-D, 2,4,5-T, MCP, CHLORO-IPC

Rock Bottom Prices!

Box 455, Farm Chemicals Magazine

Nov. Safety Contest

One-hundred-eight of the 131 companies participating in the safety contest sponsored by National Safety Council's Fertilizer Section had perfect records during November 1953. Of these, the three which worked the most man-hours were The Baugh Chemical Co., Baltimore, Md.; Virginia-Carolina Chemical Corp., Charleston, S. C. and Wilson & Toomer Fertilizer Co.'s Jacksonville plant.

New Farm Chemicals

DuPont Trademarks

DuPont Co. has adopted two trademarks for identification of its substituted urea herbicides. These include CMU and a number of related compounds.

Agricultural formulations of these chemicals will bear the trade-mark Karmex, while the trade-mark Telvar will apply to industrial products.

Karmex W now identifies the 80 per cent wettable powder formulation of CMU currently offered for selective control in asparagus, sugar cane and pineapple, and for general use in agricultural areas where complete control of vegetation is desired.

Another agricultural product, Karmex DL will be available in limited quantities in some areas this year for pre-emergence work in cotton. The active ingredient is 3-(3, 4-dichlorophenyl)-1,1-dimethylurea and the formulation a liquid suspension.

Telvar W now identifies the CMU weed killer which has had wide industrial use over the past season. This product is designed and packaged for custom applicators and industrial users for application where the objective is complete control of vegetation for an extended period of time.

Industrial trials of Telvar DW are also planned this year. This is a wettable powder formulation with the same active ingredient as contained in Karmex DL.

Supplies of these products are expected to be in the hands of distributors and dealers in time for the 1954 use season.

Davison Adds 12-12-12

Davco 12–12–12 granulated fertilizer recently was introduced by The Davison Chemical Corp., as an addition to the line of analyses supplied through the company's mixed fertilizer plants.

State experiment stations, the company pointed out, are increasingly recommending fertilizers in 1–1–1 ratio for corn and other important crops. The new product has the economic advantage of a high analysis and in addition contains calcium, sulfur and many trace elements.

Phosphate used is high in water-soluble monocalcium phosphate content and low in citrate-soluble dicalcium phosphate.

Planter Mix Introduced

Grow Power Planter Mix is to be jointly produced and distributed by American Brand Fertilizer Co., of Hobart, Ind. and Benson-Maclean, of Bridgeton, Ind.

The product is said to be something of a hybrid cross between a compost-base organic fertilizer and a potting soil, and is energized with ActivO, a bacteria-biotic-enzyme composition manufactured by the latter firm.

Shell English Formulations

At a recent Press conference in London, England, Shell Chemicals, Ltd. introduced Aldrex and Dieldrex, based on the compounds aldrin and dieldrin.

It was announced that formulations available in the English market during 1954 will be Aldrex wireworm dust and Aldrex 30, an oil, for the control of wireworms, cutworms, etc. and Dieldrex 15, also an oil, for controlling cabbage root fly, carrot fly, mangold fly and many beetle and weevil pests.

Strobane Approved by USDA for Households

USDA has accepted B. F. Goodrich Chemical Co.'s new insecticide, called Good-Rite Strobane, for use in household sprays and aerosols, according to a recent company announcement.

The material is highly effective against many household insects, including some that were resistant to DDT. It will be available in only limited quantities until the company's production facilities are completed.

'Bantus' Mix Available

A conditioner-fertilizer combination named Bantus was described in a recent release by Soil & Plant Foods, Inc. as containing natural organic mineral composted lignin shale combined with activated nitrogenous meat and vegetable tankage, to which are added chemicals to make a 6–10–4 mixture.

Bantus is presently available in one, two and five pound packages and 25 pound bags. Larger bags up to 80 pounds are to be supplied to commercial growers and for lawn applications, it was stated.

Boron Plant Food Spray

A new spray plant food for fruit trees and truck crops is being introduced by American Potash & Chemical Corp.

Named Borospray, it has a high boron content particularly adapted for use as a foliage spray on fruit trees and truck crops where boron deficiencies exist, according to AP & C.

Associations & Meetings

Texas Conference

A two day farm chemical conference at Texas Tech, Lubbock, Tex. was attended by 270 researchers, manufacturers, dealers and distributors. Dean W. L. Stangel of the school's Agriculture department stated at its conclusion, that objectives of the conference were attained "beyond our expectations."

Sponsors of the affair included Texas Tech, the Lubbock Chamber of Commerce, Texas A & M College system and the West Texas Chamber of Commerce. O. L. Bird, president of the local C of C invited the group to make the town a permanent site of the annual affair.

Speaking before the group, George Hall, district managerof Western Cotton Oil Co. said that heavy applications of fertilizers and the proper use of insecticides has increased cotton production so greatly in Reeves county that his company was willing to make production loans up to $125 an acre to reliable farmers who would follow the company's recommended fertilizer and insect control program.

Hall added that the use of chemicals has boosted the average cotton yield in the El Paso valley from three fourths of a bale per acre to a bale and a half on irrigated farms.

Joe Smith, a Shell Chemical representative, outlined the procedure involved in the development of an insecticide by his company and said that as much as $1.3 million is spent in such development work on an acceptable insecticide.

Other speakers included Dr. Donald Ashdown, director of Greenbug Research at Pantech Farms, Amarillo; Dr. Harvey Chada, Denton experiment station; E. H. McIlcain, Southern Great Plains Field Station, Woodward, Okla. and Cliff Elder, Oklahoma Experiment Station, Stillwater, Okla.

Elsas Named President

Clarence E. Elsas, president of Fulton Bag & Cotton Mills, was elected president of the Textile Bag Manufacturers Association at its annual winter meeting held in New Orleans. This is the second term for Elsas as head of the organization.

Other officers and members of the executive committee include R. K. Peek, A. H. Ames, M. J. Anderson, Jr., J. J. Eshleman, M. M. Feld, James Dowling, H. V. Howes, F. H. Ludington, C. D. Morgan, T. J. Semmes, L. O. Sprosty and Joseph Werthan.

Spear to Pest Control Group

Dr. Phillip J. Spear has been named technical director of the National Pest Control Association to fill a vacancy created by the advancement of Dr. Ralph E. Heal to the position of executive secretary.

Dr. Spear spent more than five years in structural control work and one year in insecticide sales & service for Niagara Sprayer and Chemical Co.

ME's Visit Mexican Plant

Guanos y Fertilizantes, S. A. will be inspected during the international meeting of the American Society of Mechanical Engineers, scheduled to be held March 10–12 in Mexico City.

New MCA Members

Among the companies recently admitted as member firms to the Manufacturing Chemists' Association were Consolidated Mining & Smelting Co. of Canada, Ltd.; Shawinigan Chemicals, Ltd.; Arnold, Hoffman & Co., Inc.; Godfrey L. Cabot, Inc.; National Petro-Chemicals Corp.; Sinclair Chemicals, Inc.; The United States Stoneware Co.; R. T. Vanderbilt Co. and the Western Electrochemical Co.

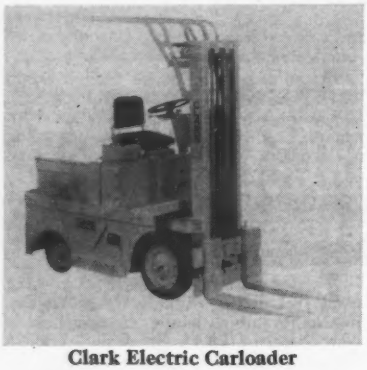
Consolidated M & S and Shawinigan Chemicals are the first Canadian companies to be admitted to the MCA. The step was made possible by a recent revision in the association by-laws.

Equipment & Supplies

New Clark Fork-Truck

Clark Equipment Co.'s Electric Carloader series fork trucks, in capacities from 3000 to 5000 lbs., for operation in hazardous areas are Underwriters' Laboratories approved.

These units, the first production-model electric fork trucks to receive UL approval, have an "EX" truck rating, which means that they are approved for operation in atmospheres containing explosive vapors.



Clark Electric Carloader

To obtain UL approval, the standard Clark carloaders have been modified to make them explosion-proof. Modifications include a special frame, totally enclosed explosion proof panel, master switch and resistor, limit switches for the seat brake, foot brake, hydraulic control valves, pump and drive motor.

SO_2 Gas Detector

The new "Sulphur Dioxide Gas Detector" manufactured by Mine Safety Appliances Co. is said to be an exceptionally accurate, easy-to-use portable instrument for quickly determining SO_2 concentrations of 0 to 50 ppm in the atmosphere of a working area.

SO_2 Gas Detector

The user squeezes the aspirator bulb three times for an adequate air sample, then reads the SO_2 concentration on a graduated scale on the detector tube. The reagent in the tester tube turns from blue to white and the length of decolorization is directly proportional to the per cent of SO_2 in the sample.

Panogen Seed Treater

Wheat and other small grains can be coated with a liquid seed disinfectant in a new "Push Button" Seed Treater developed by Panogen, Inc., of Ringwood, Ill. Grain is mixed with automatically measured quantities of the disinfectant in the seed treater.

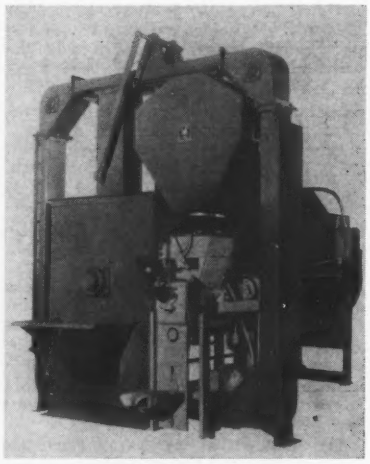
The company also makes Panogen, a red seed disinfectant which makes it easy to tell whether grain has been treated.

Fischbein Adds Products

Three products, specially prepared for the proper maintenance of Fischbein Portable Bag Closers, are available from The Dave Fischbein Co. The first is a special lubricating oil; second, a cleaning solvent and third, a thread lubricant.

Packaged Mixing Plants

A completely packaged mixing plant is being produced by John W. Williamson & Sons, of Montebello, Cal. This plant is available for mixing dry chemicals or minerals in amounts ranging from 500 lb. to 4000 lb. batches.



Williamson Plant

Consisting of a ribbon mixer with cut-in hopper, elevator, conveyor, sacking bin, motor, drives and controllers, the unit is fully equipped to operate after reassembling, the company states.

Also available is a valve bag packer and packers for open mouthed bags and drums.

Fielden Temp. Controls

High sensitivity, long term stability, reliability and low cost—all are features of a new two-zone electronic temperature controller, according to Fielden Instrument division, Robertshaw-Fulton Controls Co., its manufacturer.

It has applications in all industries where accurate temperature control is required. Because of its high sensitivity, the company says, the controller is also suitable for use in laboratory work.

Spencer Rep. Develops New Injection Nozzle

A solution injection nozzle which provides better ammoniation of mixed fertilizer than can be obtained with conventional spray pipes has been developed by H. B. Davis, Spencer Chemical Co.'s South Carolina sales representative. Approximately 15 fertilizer manufacturers in that state now are using Davis' innovation.

H. B. Davis & Nozzles

The new nozzle injects solution beneath the solids to about one inch of the mixer flights. By deflection and diffusion, this brings the solution into intimate contact with the superphosphate and potash.

The result is absolute elimination of fumes at normal ammoniation rates and minimized fumes at higher rates. The inventor also pointed out that mixer buildup and ammonia losses are practically eliminated, yielding less reversion, more uniform analysis and a drier product.

Y&T Safety Silhouette

Designed especially for over-the-road vehicle loading, the new Safety Silhouette truck simplifies pallet loading in any tight space, according to its manufacturer, Yale & Towne Manufacturing Co.

Mast height of the low-clearance, narrow-width electric fork truck is only 68 inches, and the operator's head is protected by the truck design. When driving, the top of his head is below the mast limit; any opening which takes the masts will also take the driver.

Plastic Safety Glasses

A new lightweight, all plastic Saf-I-Spectacle with a dual purpose frame has been made by United States Safety Service Co., of Kansas City, Mo.

Design of the newly styled acetate frame permits instant change of the spectacle from regular to side shield model. Perforated acetate side shields which are non-flammable and non-sparking simply screw into place for jobs requiring side protection. This unique feature permits stocking of only one type spectacle to provide two types of eye protective equipment.

Safety Committee Meets

Group assembled at NSC Fertilizer Section Executive Committee meeting. At the head of the table are Vernon S. Gornto (center), chairman; Curtis A. Cox (left), secretary and Stewart A. Washburn, senior engineer, Industrial Dept.

Vernon S. Gornto, Smith-Douglass Co., Inc., chairman of the Fertilizer Safety Section, National Safety Council, presided at a meeting of the section's Executive Committee in mid-January. According to C. A. Cox, Virginia-Carolina Chem. Corp., committee secretary, a number of interesting ideas pertaining to accident reduction were discussed at the gathering.

Wayne High, the Baugh Chemical Co., chairman of the Contest Committee, reported that efforts are being made to obtain much greater participation in the contest during 1954. He proposed a plan in which members of the committee would be asked to aid in the promotion of the contest in their respective areas.

High stated that 160 plants returned the completed questionnaire on accident experience distributed by his committee and that returns showed a frequency rate of 13.87 and a severity rate of 2.53.

Chairman of the Engineering Committee, A. B. Pettit, The Davison Chemical Corp., told the executive group that the data sheet on anhydrous ammonia was completed and was scheduled to appear in the February issue of *National Safety News*. Pettit also stated that progress is being made in completing data sheets on blasting, materials handling, ammonia solutions and insecticides.

It was also decided that efforts be made to develop a data sheet on safe practices to be followed in the process of introducing insecticides in complete fertilizer mixtures, with emphasis on the handling of aldrin.

E. O. Burroughs, F. S. Royster Guano Co., chairman of the Visual Aids Committee, reported on his committee activities, particularly investigations made into the possibility of the Section's producing a slide film or moving picture on safety in the fertilizer industry. A motion was carried requesting this committee to develop plans for underwriting and producing a sound slide film after discussion of the costs of such a production.

R. R. Murray, Swift & Co. spoke as representative of the special committee which the chairman had appointed to study the advisability of publishing a standard safety rule book. Murray stated it was the committee's recommendation that instead of a safety manual, during the course of a year a series of four employee safety publications should be published and distributed with the probability of having two booklets and two safety instruction cards.

During the session, a safety graph on the operation of two-wheel hand trucks was reviewed. The graph is scheduled for publication in the near future.

The summer meeting has been scheduled for June 13 at White Sulphur Springs, W. Va., an open date between the APFC and NFA conferences.

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AA QUALITY Ground Phosphate Rock
All grades of Commercial Fertilizers
Superphosphate — Sulphuric Acid
Insecticides and Fungicides
Phosphoric Acid and Phosphate
Phosphorus and Compounds of Phosphorus
Fluosilicates — Salt Cake
Gelatin — Bone Products
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33 FACTORIES AND SALES OFFICES, SERVING U.S., CANADA AND CUBA—ASSURE DEPENDABLE SERVICE

Washington Report

By Fred Bailey & John Harms

Press-time odds on passage of the Miller pesticide bill are considerably higher than in the past. This by virtue of the fact that Sen. George Aiken, chairman of the Agriculture Committee and GOP farm wheelhorse in the upper House, sponsored a companion measure in the Senate. Aiken bill is S 2868; Miller bill is HR 7125.

Senate Labor and Public Welfare Committee may await House action on the Miller bill before making a decision. House Interstate Commerce Commission is expected to report the Miller bill favorably in near future . . . although it had not been scheduled at press-time.

Meantime, Deputy Food & Drug Administrator George Larrick told Farm Chemicals he thought the only reason for the hold-up in issuance of "a whole flock of standards" was that somebody might think "we are trying to scuttle the Miller bill." Final decision on if & when tolerances . . . already drawn up by FDA . . . are released is up to Health & Welfare Secretary Hobby.

New land use program is sought by Secretary Benson. Recent unpublicized meeting of farm organization land experts and Federal specialists was told of the need . . . asked to contribute ideas. Thing that's got officials bothered is what happens to 30 million acres forced out of cotton, wheat and corn by 1954 production curbs.

Officials were receptive to the following line of thinking . . . watch for it to show up in program planning announcements later:

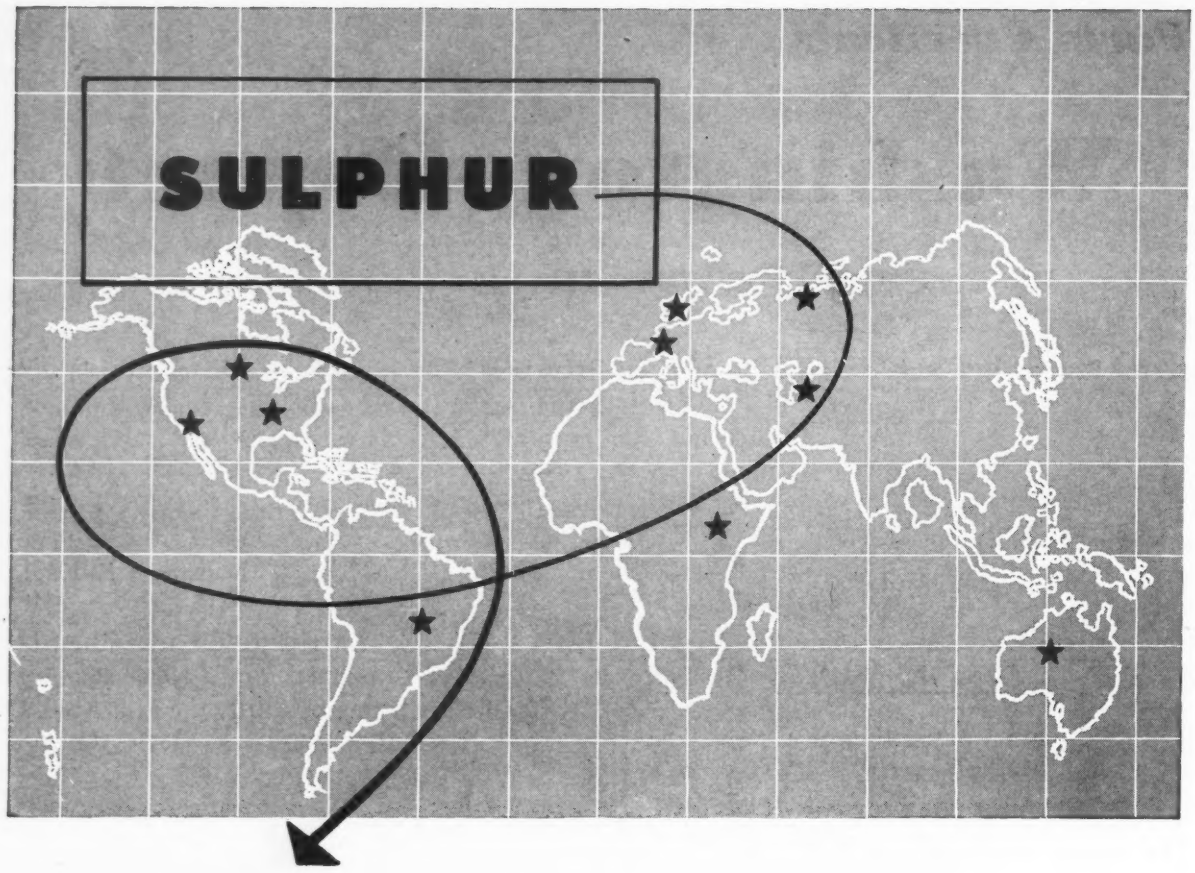
A sudden and complete shift to a desirable land use program is not possible nor practical. But we need to launch a program that leads in that direction. It will take time to make necessary individual farm land adjustments and to bring production in line with Nation's needs.

Federal, and perhaps state, assistance will be necessary in most cases to assist farmers in taking low-production acres out of cultivation. Some compensation will be necessary to protect farmers against severe loss of income. Assistance also will be needed for sharing the cost of putting the diverted land to soil-building and soil-conservation uses.

Two types of payments would be needed under this approach: (1) Compensation for loss of income resulting from removal of land from cash crops and (2) aid to farmers to install conservation practices on land removed from cash crop output.

Size of farmer payments as inducement to remove "unproductive" land from use would vary, ranging between $15 to perhaps $40 per acre. Payments for conservation practices would be similar to present payments under the agricultural conservation program (ACP).

President Eisenhower has approved Federal payments to help make shifts from controlled crops to grass and legumes where they are especially difficult. No official plan to accomplish this has as yet been proposed. Proposed legislation by several farm state congressmen, however, calls for such payments to amount to about $9 for each acre taken out of wheat and put into conservation; $13 per acre for corn and up to $17 per acre of cotton.



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Sulphides of iron, copper, zinc and hydrogen and calcium sulphate are all sources of sulphur dioxide, the starting point of the manufacture of that universal and all important chemical tool, sulphuric acid.

Elemental sulphur, per se, is essential for such compounds as carbon bisulphide, rubber vulcanizing and certain fungicides, insecticides and black powder. Economics dictate the use of the element or the sulphides or sulphate for other products and processes.

*International Minerals Conference, 1952-53

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Note: Here's what Agriculture department officials figure farmers will do with 18 of the 30 million acres to be taken out of controlled crops: 4.9 million acres into oats, 3.5 million into grain sorghums, 3.4 million into barley, 3 million into soybeans, 2.5 million into hay and less than a half-million into rye and flax. The rest, officials hope, will go into conservation.

Government-sponsored research and farmer education on research stand to get a big boost . . . if Secretary Benson has his say about appropriations for the year beginning July 1. Benson is asking for a research-education budget total of $112 million for fiscal 1955. That's an increase of $18 million above estimates for the current year . . . to be broken down into approximately $10 million additional for research and $8 million for extension services. This increase was recommended by farm organizations who fear farmers are catching up with available research results.

All is not "beer and skittles" on the Benson budget, however. Farm State congressmen are protesting "false economy" in the Secretary's proposal to make a net budget cut of about 10 per cent. While Benson seeks the 30 per cent increase in funds for "research and education" he wants big cuts in loan funds for rural electrification, farm housing.

Federal officials who encouraged increases in ammonia fertilizers are optimistic that the current surplus is only temporary. They believe that demand for ammonia may reach present industrial capacity of about 2.5 million tons during the next 12-month period. And, what's more, they say that industry plans show no let-down in further planned expansion. Outlook is for ammonia productive capacity to go to three million tons in 1955 and perhaps higher.

Fertilizer consumption shows every sign of going higher . . . despite forced cutbacks in some important crops. Farmers, showing inclinations to buy earlier, are turning to fertilizer as the yield booster to force production to comparable levels with production under unrestricted land use. Official thinking is that acre use will continue to be restricted in the immediate years ahead . . . pointing to further farmer efforts to boost per acre yields.

More effective insect pest-reporting service is planned by the Agriculture department in cooperation with states and some industry entomologists. First steps have been taken to provide full-time insect survey supervisors in all States. Such officials have already been appointed in Missouri, Maryland, Texas, Arizona, Utah, Louisiana and Florida.

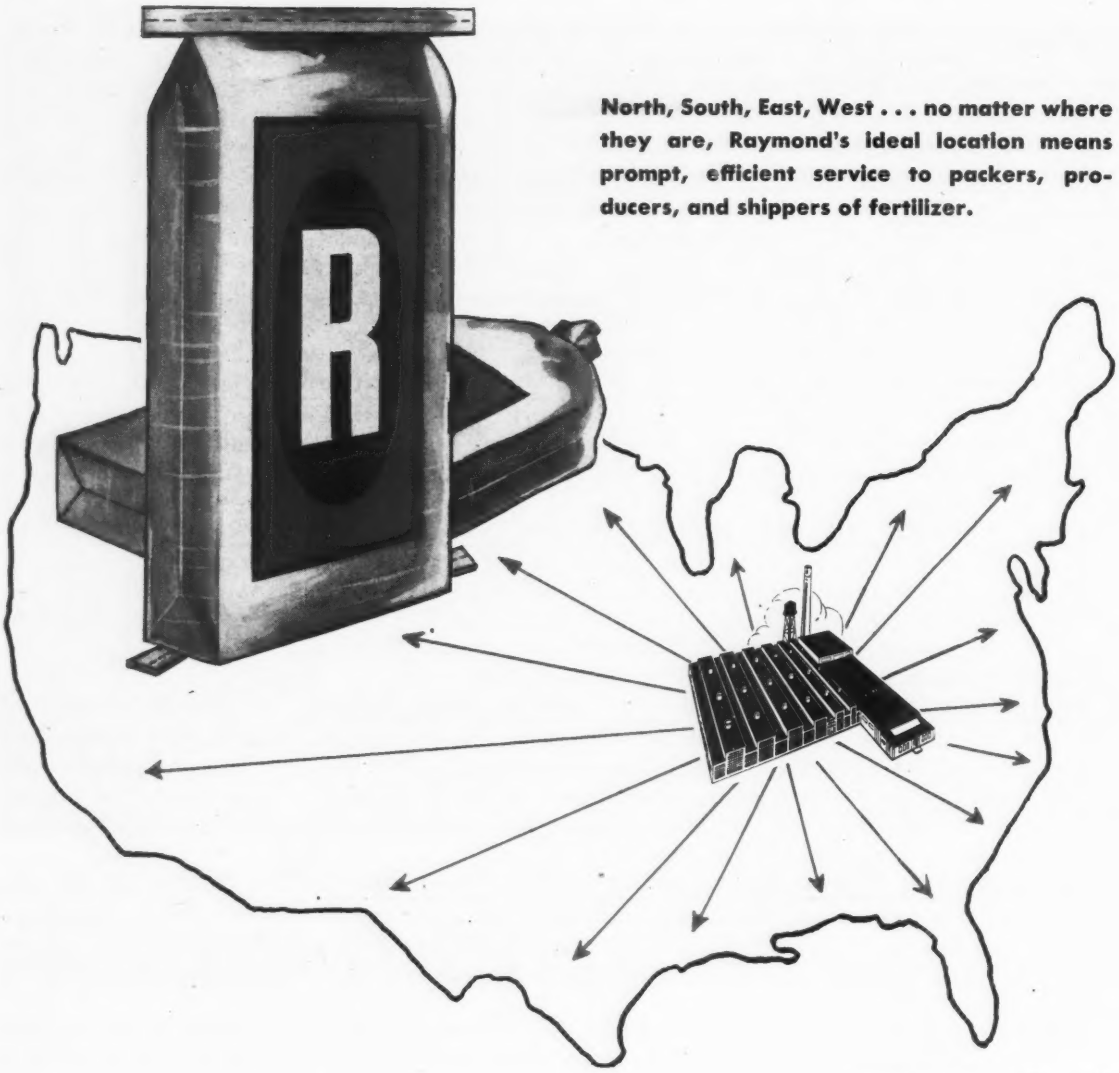
Officials say that "full-time supervisors in the various States are expected to increase the flow of timely and valuable information about impending insect outbreaks and the discovery of new or dangerous insect pests." Program of full-time survey supervisors will improve quality and importance of the cooperative survey report program launched in 1952. New survey plan was recommended by an advisory committee representing the Entomological Society of America.

Footnotes to Federal science:

Toxic effects on plants from some commonly used organic insecticides last as long as eight years . . . according to A. C. Foster, USDA plant pathologist. Tests at Beltsville Research Center showed wide variations in persistence of different insecticides, with variations also attributable to type of soil. Compounds included in the study were DDT, BHC, toxaphene, chlordane, heptachlor, lindane, aldrin, dieldrin, endrin, isodrin, rothane, methoxychlor, CS-708 and certain isomers of DDT, BHC and chlordane.

Use soil conditioners in band or hill placement for vegetable crops, advised the USDA Plant Industry Station at Beltsville. Researchers suggest that this method makes conditioners more effective . . . offers possibility of reducing quantity needed. Conditioners used in experiments included (1) VAMA, a compound of calcium, vinyl acetate and maleic acid, and (2) two forms of HPAN, a sodium salt of hydrolized polyacrylonitrile.

Productive efficiency in soybeans can be improved in the South by use of lime, phosphate and potash and, generally, later planting dates than is customary. Soybean production will be popular this year as a substitute crop for cotton, corn and some wheat.



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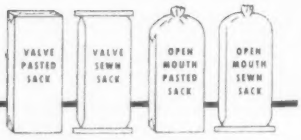

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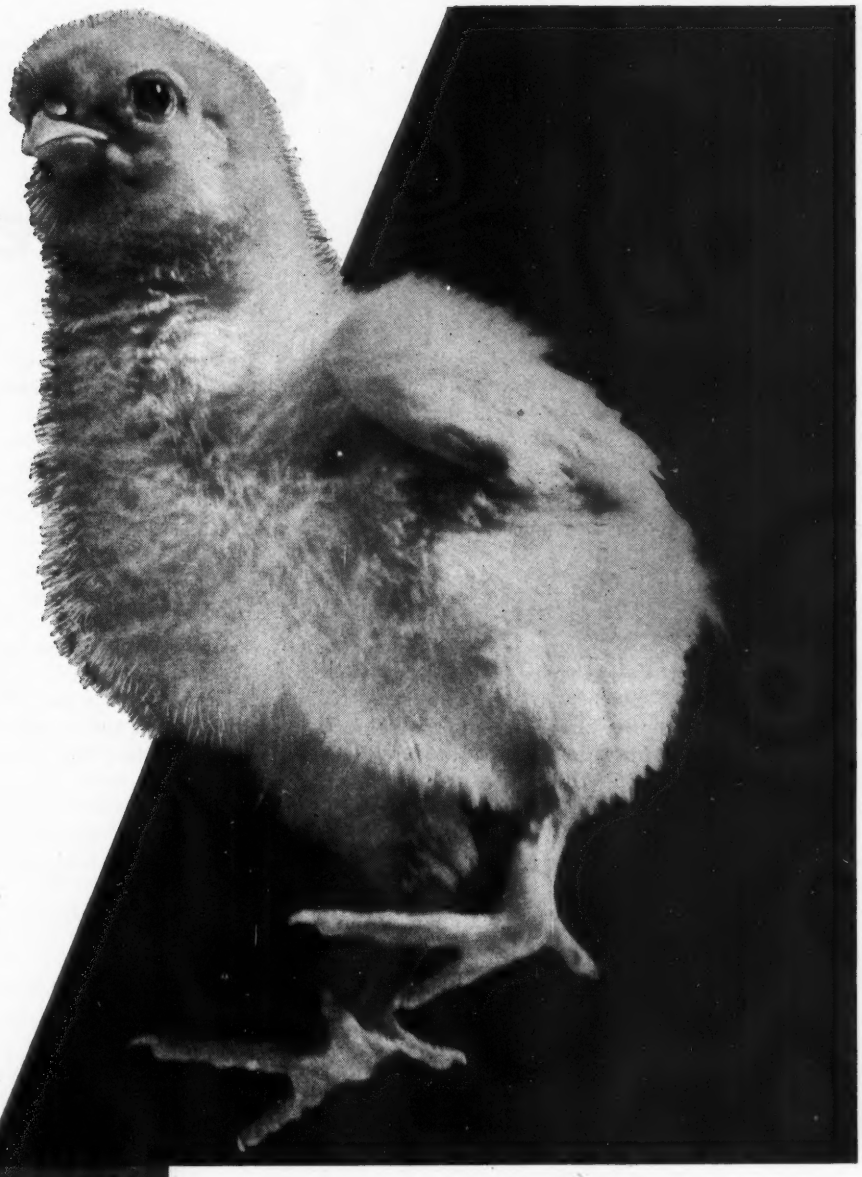

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Taylor Reports on S. A. Markets

By Dick Brown

CAUTION is a watchword United States farm chemical firms, particularly the small and middle-sized operators, will do well to practice if they are eyeing the South and Central American markets as new outlets for their products.

The "South of the Border" theme may be fine from a musician's standpoint, but it's an entirely different tune when it comes to dealing with insecticides, according to officials of Taylor Chemical Co., a North Carolina farm chemicals manufacturer headquartered in the Sandhills city of Aberdeen.

Taylor Chemical, which distributes its Super-Kill products throughout the Southeast and as far north as New Jersey, wet its feet in the South American trade a year ago and is still evaluating the advantages and disadvantages of the move.

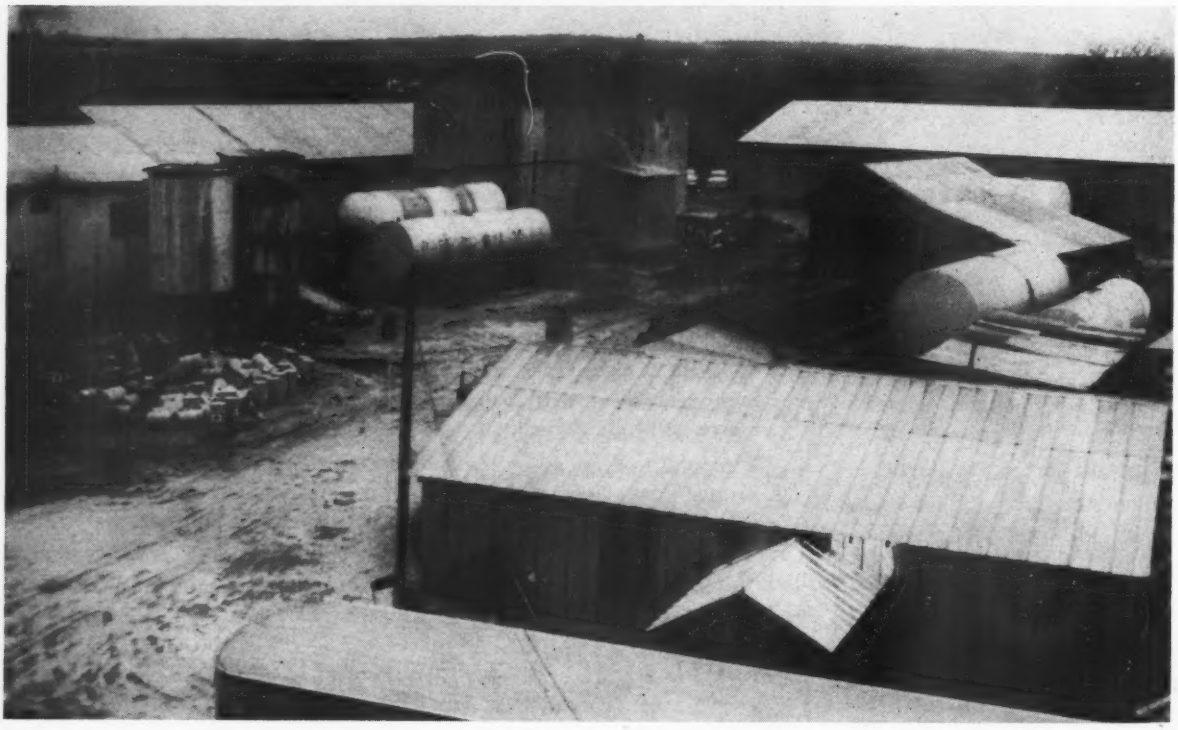
As a result, the company has adopted a "wait and see" attitude. As President J. M. Taylor, who organized the business in 1933, puts it, "we realize the market potential is great in South and Central America, but there are so many ifs under present conditions that we don't feel it's to our advantage to expand distribution in that direction. Naturally we are interested in any new territory that will return a fair profit, but we gave the move a fair trial and results to date have failed to justify any permanent expansion along such lines.

"However," he emphasized, "conditions are changing every day, and by the time this is written the picture may be entirely different."

J. T. Conner, Jr., a Taylor representative who spent several months last year in South and Central American countries studying the overall farm chemicals market, speaks from actual experience when he says, "there are so many intangibles involved, in addition to the tangible profit and loss factors, that a definite yes or no on expansion in that direction is almost impossible to give.

"Before going into conditions," Conner said, "let me emphasize that my observations were gained almost a year ago. Since that time many changes have been made, conditions in some places, particularly

Exterior shot showing a part of the plant yard of Taylor Chemical Co., at Aberdeen, North Carolina.



Brazil, have improved, and what held true 12 or even six months ago may not be today's case.

Varying Market Picture

"The market picture varies in every country, just as do currency conditions, demand, supply outlets and a host of other things. In Brazil, for instance, a year ago a new monetary system had just gone into use and inflation had a direct bearing on the seller. We learned that Brazilian collections—that was getting our money by draft, letter of credit or other means—were extremely slow and uncertain, taking from nine months to a year on the average.

"This also constituted a problem in other countries, and not many U. S. firms are in a position to operate on such a long-term basis. However, the picture has already changed in Brazil, a country that is just beginning to capitalize its tremendous potential, and it's much easier to collect accounts than before.

"There is an open market in Peru, no duty, and a more stable monetary system, but the farm area is limited. Collections are on a sight draft basis, usually taking from three to six weeks.

"Columbia also offers a stable currency. Here one of the biggest purchasers is the CAJA, a semi-official, low-rate lending agency. The big coffee co-ops are large insecticide buyers, and have New York offices which simplifies payment by letter of credit. Government regulations are extremely close, a condition common to most of the countries down there.

"Central America offers, for the most part, limited agricultural areas, plus little crop diversification, and none of its countries are what we would term large volume buyers.

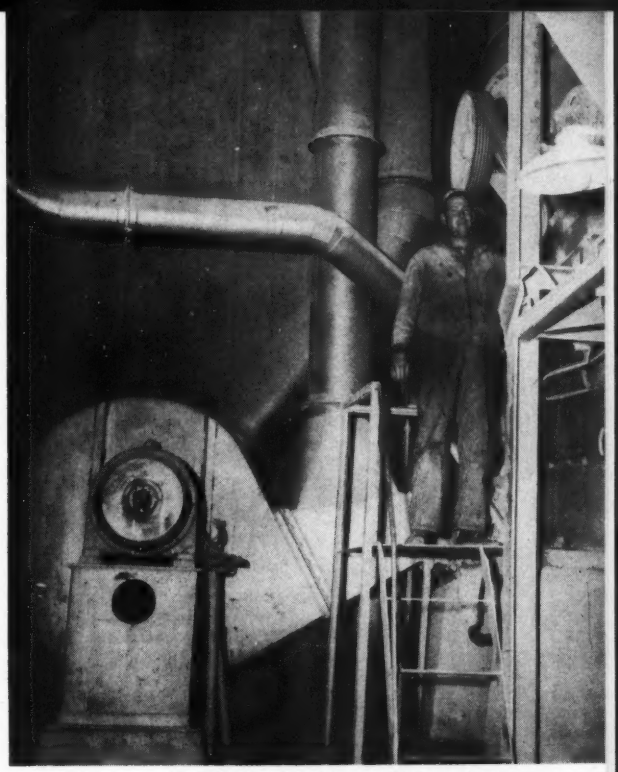
"I found," Conner continued, "that almost every country to the South of us has become extremely conscious of industrialization in the past few years, and wants its own farm chemicals industry. They are ready to bend over backwards to U. S. firms willing to set up local mixing plants and provide the technical knowledge. One or two of the big companies have done this, but not many of us are willing to tie up the necessary capital.

"Keen competition—it often borders on outright price war—has become another important factor. In one instance we found a rival was quoting a price almost a cent below what the same product was bringing on the home market. We certainly did not feel justified in meeting such competition, particularly since it meant a loss in addition to shorting our regular customers here at home.

"Actually," Connor said, "I don't believe the South American potential has been scratched, but it may never become a big market for the average firm in this country. You can't say at this point. They need the know-how and equipment, and are fast getting both. They have the advantage of some of the world's cheapest labor, but on the other hand, it's blocking mechanization.

Market Problems

"Per-day wages are so low that the large farm owners are not interested in equipment. They figure it is not worth it when they can do the job much cheaper by hand. That's well illustrated in Peru, where a pound of lint cotton can be produced for less than nine cents.



Raymond roller mill installation at the Taylor Chemical Aberdeen plant.

"Their knowledge of application of insecticides is downright pathetic, a fact which naturally cuts the effectiveness of the product, and makes education something which should go hand-in-hand with any expansion plans on the part of U. S. firms.

"Demand is an uncertain factor, varying from season to season and locality to locality. Plagues strike frequently and always mean a big market for chemicals. Demand then slacks in normal years, all of which creates somewhat of a production schedule problem.

"We found plenty of other problems arising last year in our dealings in the various countries. Some of them may not exist today, but there's no getting around the fact that down there you are dealing with a different type buyer, and an entirely different market picture.

"Today you definitely must have a man in every territory in which you distribute. In the past you could handle the markets by correspondence and cable, but not any more. If you sell, you must have on-the-spot representation.

"You usually deal through a local agent, who corresponds to a broker or commission man, and may be handling a dozen unrelated products in addition to farm chemicals. Sales contracts must, and I emphasize the must, cover every contingency because in some cases you are at a total loss in case of legal difficulties without an ironclad contract. We also found it necessary to collect an initial payment at least equal to freight return in case material was not accepted on arrival.

"Then," Conner added, "you have the intangibles—the things that have a direct bearing on the market, but lurk beneath the surface, out of sight without close scrutiny. For example, reputation. We held the

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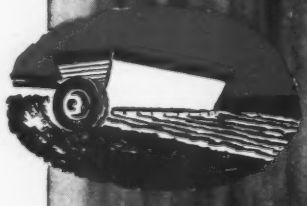

2. APPLICATION CONTROL—drills free and even . . . does not bridge over in the drill.

3. FOOD CONTROL—supplies uniform amount of plant food at desirable rates.

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No longer is it necessary for you or the farmer to worry about lumping or caking . . . Davison's Granulated Superphosphate will store without becoming hard or caked. And when the farmer starts to apply Granulated Superphosphate in the field he will find there is no dusting nor will it bridge over in the drill. Granulated Superphosphate drills freely and evenly giving complete coverage. Because of the granular structure, plant food is released at desirable rates.

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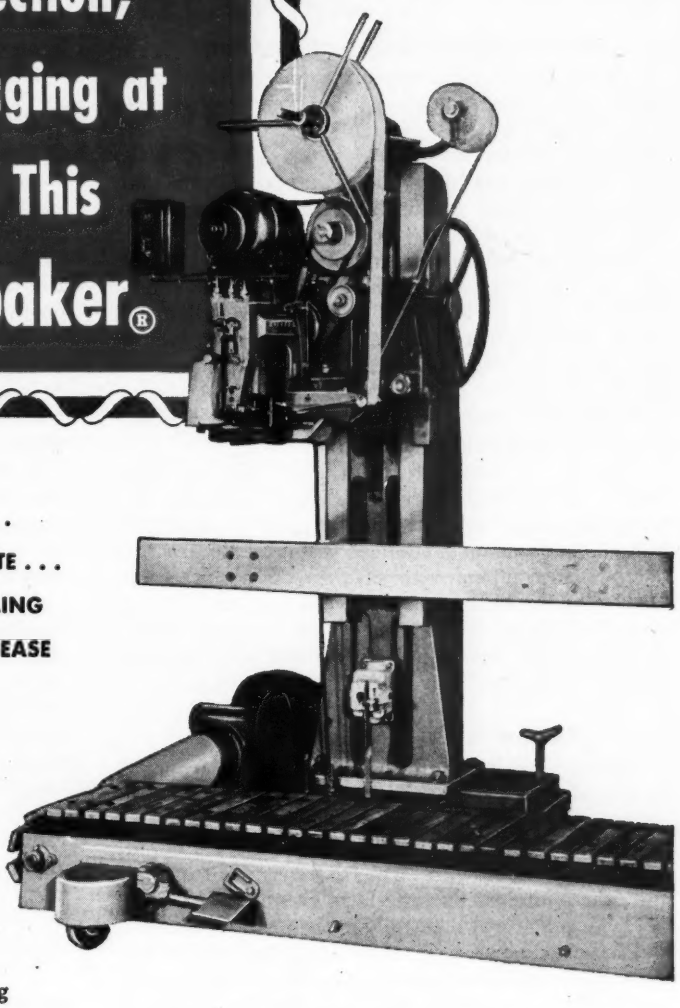

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Model ET applies famous "Cushion-Stitch" over dry tape for sift-proof closure. Model E-1 applies "Cushion-Stitch" only, for use where sift-proofing is not essential.

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upper hand for years and the trademark, 'made in U. S.' on any product meant nothing short of perfection to the South American buyer. If it came from the States he wanted it in preference to anything else that might be available.

Inferior Chemicals Upset Applecart

"The applecart, as far as our field is concerned, was upset when some low-grade, low-weight chemicals were dumped on the markets, leading to a logical conclusion that our goods are not always the best after all. This fact has aided some European firms that have setup plants within the countries in order to take advantage of the cheap labor market.

"Virtually the same chemical formulas that are used here are in greatest demand by our South American neighbors. They want BHC and parathion for coffee, DDT for corn, toxaphene for livestock, sulfur and copper for bananas, toxaphene dusts and sprays for cotton and so on down the line. Their insect problems may differ to some degree, but on the whole conditions are strikingly similar.

"Overall," Conner predicted, "I'd say the long range future in South America is great, but today the return just isn't there for the average U. S. chemical firm. Conditions must stabilize still more for any but the largest companies to operate on an extensive basis. The golden opportunity for us, and similar firms, may never develop, but we are keeping a finger on the market pulse down there, and will certainly return if conditions warrant it."

Conner is 'On-the-Spot' Observer

Conner's opinions and observations stem from actual on-the-spot observation. Traveling by commercial airlines, he spent several weeks in the various countries, analyzing conditions from a sales standpoint, and talking with farmers, government officials and others interested in the farm chemicals market.

The firm has grown steadily in the past two decades, and is an acknowledged leader in its territory. The main operation is located on a spur line of the Norfolk and Southern Railroad just west of the Aberdeen city limits.

Offices and warehouses are maintained in Alabama, Georgia, North and South Carolina. All products are trademarked Super-Kill, and production includes insecticides for cotton, tobacco, peanuts, peaches, apples, soy beans and all other major crops.

A special branch is maintained at nearby Candor, in the heart of the Sandhills peach belt, to service the peach industry. It handles baskets and other packing materials in addition to insecticides.

Ability to keep abreast of the latest developments in the ever-progressing farm chemicals field has played a major part in the company's expansion. A three-man force works constantly in the well equipped laboratory on formulation, analysis and to run checks on the firm's many products.

Production Facilities

Insecticides are turned out in two separately housed continuous process impregnation mills, one of which includes a Micro-Pulverizer unit.

A 400-ton sulfur silo for storage purposes connects directly to one of the mills. Sulfur is fed by Link-Belt screw type conveyors and elevators into hoppers, then to Exact Weight automatic scales, next to the mixer and finally into a Raymond Mill grinder unit.

Products are packed in 50 pound, 25 pound, and smaller size bags on St. Regis Universal Packers. The mill containing the Micro-Pulverizer unit is equipped with a Dracco dust control system.

The firm maintains its own fleet of trailer trucks for shipping, and distributes the bulk of its orders in this manner. A landing field and completely equipped shop and hanger adjoins the plant, and houses the two planes that are used for almost all business travel.

President Taylor, Sales Manager Dan Farrell and other officials are proud of the compact, efficient organization they have built, and of the high reputation their firm holds in the various states in which it does business.

Their motto has always been, "founded and built on service," and Taylor says, "we'll carry that out in South America, Central America or any other market that offers the potential on a sound foundation." ◆

Left: Taken in mixing room when a straight 20 per cent toxaphene was being batched. J. H. Day mixers are used and Link-Belt elevators transport material.

Bottom: At work in the completely equipped laboratory are chemists Jim Paris (left) and Bob Worrall.

1952-53 Fertilizer Consumption Up

By Walter Scholl, Hilda M. Wallace and Esther I. Fox

Soil and Water Conservation Research Branch
Agricultural Research Service
U. S. Department of Agriculture
Beltsville, Maryland

Fertilizers, estimated to have been consumed in the United States, including the territories (Hawaii, Puerto Rico and Alaska) for the year ended June 30, 1953, amount to 23,143,000 tons. This quantity represents an increase of 3.2 per cent or 711 thousand tons more than the 22,432,418 tons reported for the 1951–52 season.

Consumption of commercial mixtures was estimated to be 15,508,000 tons, of materials containing primary plant nutrients (N, P_2O_5, K_2O) for direct use, 6,765,000 tons and of secondary and minor element materials, 870 thousand tons. The respective increases for these classes are 2.8 per cent, 3.1 per cent and 10.8 per cent above their consumption in 1951–52.

For preparing these estimated totals by regions, the quantity of fertilizers consumed in each state was determined from shipments reported by all of the large producers normally supplying more than 80 per cent of the national total consumption and most of the small manufacturers. These quantities were correlated with the tonnage reports issued by states and adjusted for government distribution. State summaries were available from all but 14 states. No summaries were available from the territories.

Primary Nutrients

Total consumption figures for 38 states and two of the territories were considered to be 100 per cent. Primary nutrients contained in mixtures consumed in these states and territories were based on the guaranteed analysis of each grade and the total adjusted for overruns or underruns.

Primary nutrients contained in the materials consumed in these states were based on their average analysis as reported in the bulletins of the state fertilizer control laboratories. For all other states, the estimates were considered to be well within five per cent above or below actual consumption.

Preliminary totals for the nine regions of the continental United States and the territories tabulated in Table 1 indicate consumption of fertilizers in the North Central and the Pacific regions was nine to 20

Table 1. Preliminary totals of fertilizers consumed, year ended June 30, 1953[1]

Region	Mixtures 1,000 tons	All fertilizers[2] 1,000 tons	Relative consumption[3] 1951-52 = 100 per cent
New England[4]	390	463	95
Middle Atlantic[5]	1,798	2,102	103
South Atlantic[6]	5,025	6,148	99
East North Central[7]	3,661	5,037	111
West North Central[8]	1,229	2,092	120
East South Central[9]	2,050	3,173	93
West South Central[10]	719	1,399	95
Mountain[11]	64	331	100
Pacific[12]	303	2,022	109
Continental U. S.	15,239	22,767	103
Territorial[13]	269	376	99
Total: 1952-53	15,508	23,143[14]	103
1951-52	15,086	22,432[14]	100
1950-51	13,978	20,991[14]	94

[1] Includes fertilizers distributed by government agencies.

[2] Includes colloidal phosphate and phosphate rock, basic slag, processed manures, sewage sludge, secondary and minor element materials such as borax, sulfur, metallic salts, etc., used as separate materials and mixtures. Does not include liming materials, but includes gypsum. Excludes materials used in the manufacture of commercial mixtures.

[3] Materials not guaranteed to contain N, P_2O_5 or K_2O are excluded from ratios.

[4] Maine, N. H., Vt., Mass., R. I., Conn.

[5] N. Y., N. J., Pa., Del., D. C., Md., W. Va.

[6] Va., N. C., S. C., Ga., Fla.

[7] Ohio, Ind., Ill., Mich., Wis.

[8] Minn., Iowa, Mo., N. D., S. D., Neb., Kan.

[9] Ky., Tenn., Ala., Miss.

[10] Ark., La., Okla., Tex.

[11] Mont., Idaho, Wyo., Colo., N. Mex., Ariz., Utah, Nev.

[12] Wash., Oregon, Calif.

[13] Hawaii, P. R., Alaska.

[14] Materials not guaranteed to contain N, P_2O_5 or K_2O included in 1952-53 totals 870,000 tons; in 1951-52, 785,050 tons and in 1950-51, 645,441 tons.

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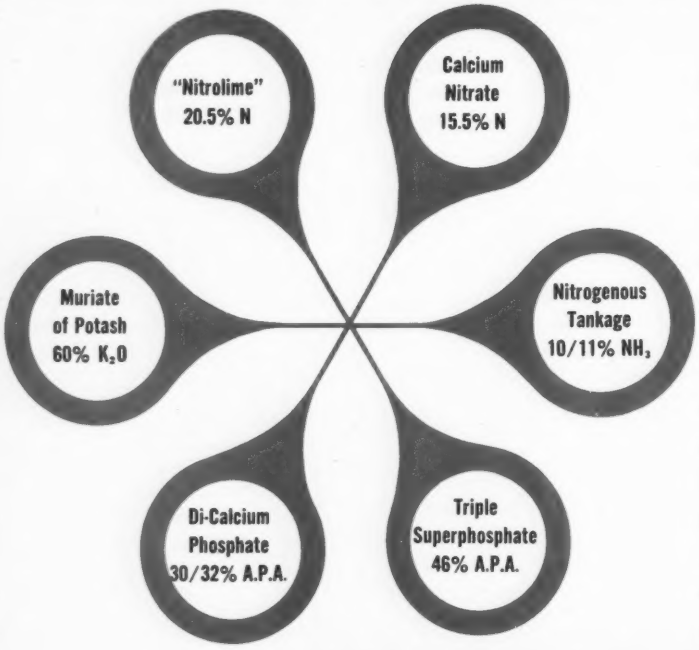
"Nitrolime" 20.5% N
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Muriate of Potash 60% K_2O
Nitrogenous Tankage 10/11% NH_3
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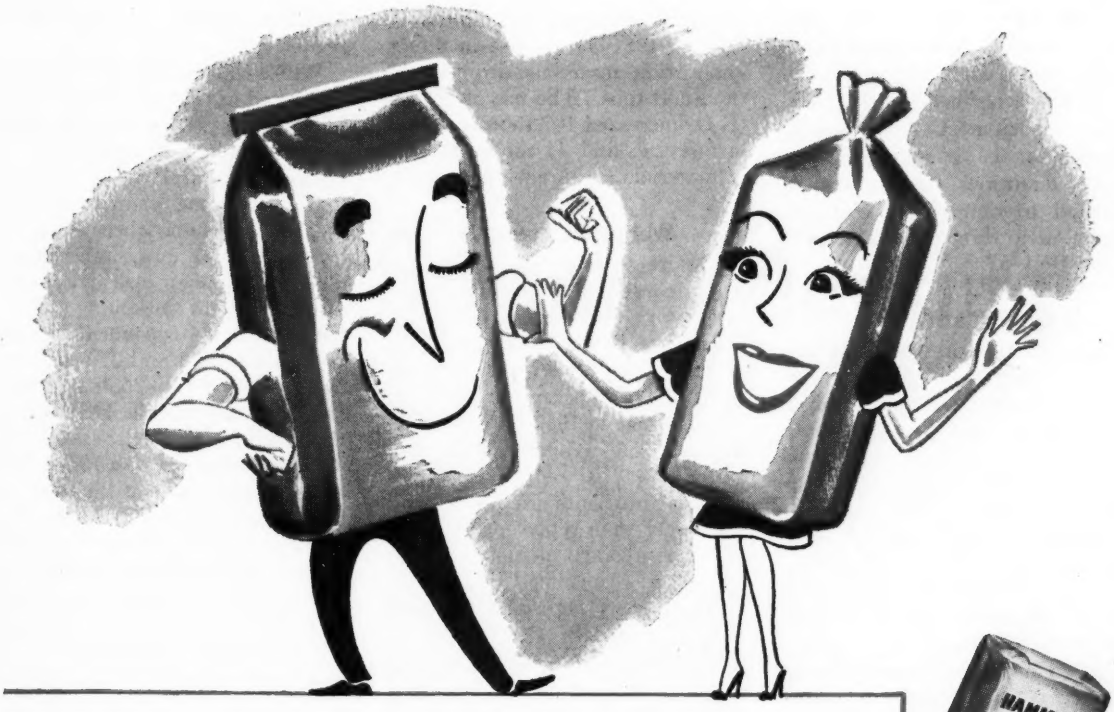

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Pasted Valve Type

Sewn Valve Type

Open Mouth Pasted Bottom

Open Mouth Sewn Bottom

HAMMOND BAG & PAPER COMPANY

General Offices: Wellsburg, W. Va.

Plants in Wellsburg, W. Va., Pine Bluff, Ark. and Charlotte, N. C.

Representatives in the following cities: CHICAGO, ILL • BLUEFIELD, VA. • ST. LOUIS, MO. MINNEAPOLIS, MINN. • LIGONIER, PA. • WASHINGTON, D. C. • NEW YORK, N.Y. KANSAS CITY, MO. • AKRON, OHIO • DALLAS, TEXAS • BIRMINGHAM, ALA. CHARLOTTE, N. C.

per cent more than during the 1951–52 season. At the same time, fertilizer use is discernibly lower by five to seven per cent in the New England and South Central regions. Whereas, for the remaining regions and the territories, consumption is indicated to range from one per cent below to three per cent above that in 1951–52.

Gain in Plant Foods

Consumption of the primary plant nutrients, as tabulated in Table 2, amounted to 5,562,000 tons. This is a net increase of 359 thousand tons or 6.9 per cent more than the revised total of 5,203,003 tons consumed in 1951–52. The net increase in nitrogen is 194 thousand tons (13.7 per cent), available P_2O_5 34 thousand tons (1.5 per cent) and K_2O 131 thousand tons (8.3 per cent).

The amounts and proportions of nutrients consumed in mixed fertilizers were 718 thousand tons or 44.4 per cent of nitrogen, 1,755,000 tons (78.6 per cent) of the available P_2O_5 and 1,528,000 tons (89.2 per cent) of the K_2O. The highest increase in nutrients was in nitrogen supplied by materials for direct application. These accounted for 124 thousand tons of the increase in nitrogen.

Although mixtures supplied 74 thousand tons more available P_2O_5 than in 1951–52, its use in direct application materials dropped 40 thousand tons. The use of potash (K_2O) increased 107 thousand tons in mixtures and 24 thousand tons in materials for direct application.

Weighted Averages

The weighted average plant nutrient contents of mixtures, estimated for this report, are shown in Table 2. The national average increased from 24.86 per cent in 1951–52 to 25.8 per cent in 1952–53. This average in 1952–53 comprised nitrogen 4.6, available P_2O_5 11.3 and K_2O 9.9 per cent. The values for these nutrients are 0.3, 0.2 and 0.4 higher than reported for 1951–52. The average nutrient content of mixtures consumed in each region and the territories was higher than in 1951–52.

The net gain in value of the nutrient content of mixtures consumed in the Mountain region was 2.6 per cent. Approximately one-half of this value was the result of increasing the content of K_2O in mixtures.

In the West North Central region, the nutrient content of nitrogen increased from 5.08 per cent in 1951–52 to 6.1 per cent in 1952–53. This was the highest change in value of the nitrogen content of mixtures shown by any other region.

While the tonnage of fertilizers consumed in the New England and West South Central regions is indicated to be five per cent below the consumption in 1951–52, approximately the same quantity of nutrients was consumed because of the use of higher analysis fertilizers. The average plant nutrient content of all fertilizers containing primary plant nutrients consumed in these regions was 27.4 and 27.8 per cent in comparison with 26.35 and 26.07 (revised) per cent in 1951–52, respectively.

Higher analysis fertilizers have changed the order of highest consuming regions. Although total consumption of fertilizers is still the highest for the South Atlantic region where consumption amounted to 6,074,000 tons of primary nutrient bearing fertilizers in comparison with 5,036,000 tons in the East North Central region, the nutrient content was but 1,308,000 tons compared with 1,320,000 tons in the East North Central region. In terms of primary nutrients this latter region is now the highest consuming area.

The average nutrient content of fertilizers consumed in the South Atlantic region was 21.5 per cent in comparison with 29.4 per cent for the East North Central region. ◆

Table 2. Preliminary totals of primary plant nutrients contained in all fertilizers and average content of mixtures, year ended June 30, 1953

Region	N	Available P_2O_5[1]	K_2O	Total	Relative consumption 1951–52 = 100	Weighted average content of mixtures
	1,000 tons	1,000 tons	1,000 tons	1,000 tons	per cent	per cent
New England	25	49	52	126	99	28.4
Middle Atlantic	101	250	171	522	105	25.6
South Atlantic	368	489	451	1,308	101	21.6
East North Central	234	530	556	1,320	116	30.1
West North Central	179	304	132	615	129	33.0
East South Central	253	292	199	744	95	23.0
West South Central	151	152	85	388	101	26.0
Mountain	46	53	3	102	100	32.4
Pacific	205	94	28	327	110	26.3
Continental U. S.	1,562	2,213	1,677	5,452	107	25.7
Territorial	54	20	36	110	101	29.2
Total: 1952–53	1,616	2,233	1,713	5,562	107	25.8
1951–52[2]	1,422	2,199	1,582	5,203	100	24.86
1950–51	1,237	2,110	1,380	4,727	91	24.19

[1] Includes 2 per cent of the colloidal phosphate and 3 per cent of the phosphate rock marketed for direct application, as available P_2O_5. [2] Revised.

Distribution, Sales & Use Problems to be Discussed at Houston

NAC Spring Meeting

PROBLEMS in distribution, sales and use of pesticides will be discussed at the spring meeting of the National Agricultural Chemicals Association to be held at the Shamrock Hotel in Houston, Tex., March 24 through 26.

Presidential Address

NAC President Paul Mayfield, Hercules Powder Co., will open the affair with his presidential address at 10:00 a.m. Mayfield and NAC Vice President W. W. Allen, Dow Chemical Co., will preside over the meetings.

Texas Commissioner of Agriculture John C. White will address the group on the first day. Dr. R. D. Lewis, director of the Texas Agricultural Experiment Station, has accepted an invitation to review some of the research and development of farm chemicals in the Southwest. Lewis is expected to emphasize the importance of pesticides and other farm chemicals in the progress of Texas agriculture.

The credit situation as it pertains to the farm chemicals industry will be discussed by J. A. Walker, credit manager of the Standard Oil Co. of California.

Dr. S. B. Freeborn

An address by Dr. Stanley B. Freeborn, provost of the Davis, Cal. Station of the California College of Agriculture, will complete business activities of the first day. Freeborn is expected to speak on the value of pesticides and their contribution toward raising standards of living by improving the public health and improving the quantity and quality of food in the United States.

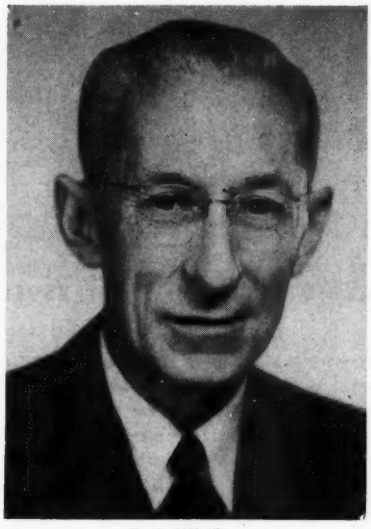
NAC Reception

A reception for members and guests of NAC will be held on the first evening.

According to the association program, the business sessions on both Thursday and Friday will be restricted to members and invited guests.

A golf tournament Thursday afternoon and either a banquet or barbecue that evening will complete the scheduled activities for members and guests. ◆

Dr. R. D. Lewis



J. A. Walker

John C. White

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Tank car shipments of Anhydrous Ammonia (82% nitrogen) are assured to Phillips contract customers by Phillips huge production facilities in the Texas Panhandle. Write our nearest district office for full information.

3 NITROGEN SOLUTIONS

Get more N per dollar! Phillips *66* Nitrogen Solutions are well suited to the preparation of high-analysis fertilizers and the ammoniation of superphosphate. These three nitrogen solutions keep handling costs low! Promote rapid, thorough curing!

4 AMMONIUM NITRATE

Phillips *66* Prilled Ammonium Nitrate contains 33% nitrogen. The small, coated prills or pellets resist caking . . . handle easily. Depend on Phillips *66* Prilled Ammonium Nitrate for uniform, free-flowing properties and top-notch crop response.

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GLF Granulating Plant Uses Agglomeration Method

By James E. Madigan, Ch.E., P.E.

Fertilizer Engineering and Equipment Co.

GRANULATION processes at present may be defined as dispersing and cooling a melt as in the shot tower, pressure and extrusion of pellets, seeding or building up of a material gradually as at Trail, B. C. and the agglomeration of mixed fertilizer through wetting and rolling.

The agglomeration method was utilized to convert the first of the G. L. F. Soil Building Service fertilizer plants to granulation. A complete unit was designed and installed in its Lyons, N. Y. plant and began operation in December.

Conversion Inexpensive

Although conversion to granulation has been found simple and inexpensive, there still is prevalent a general unfamiliarity with both the equipment and the process. Competition everywhere is spurring the need for this essential equipment.

The process as designed and installed will enable G. L. F. to supply its many customers with a superior product while increasing its ammoniation rate to eventually secure production of a uniform, free-flowing product at little, if any, added cost.

Ammoniation

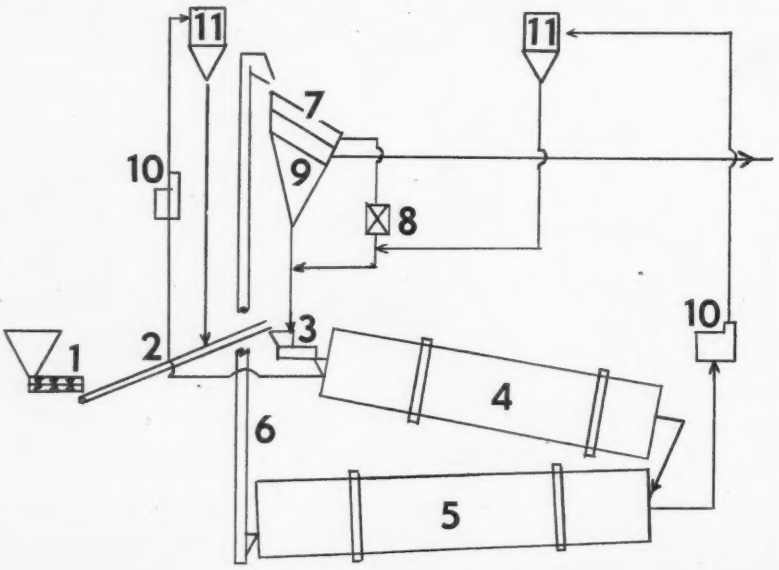
The use of ammoniating solutions, besides reducing material costs, also gives rise to a relatively greater liquid phase volume for given water volume (less water to evaporate) because of the greater solubility of ammonium nitrate plus the increase in solubility due to exothermic heat reaction of ammoniation. Full use is made of both the heat of ammoniation and the degree of plasticity at low moisture content derived from using ammoniating solutions.

Operation, as outlined on the flow chart, is as follows:

The weighed batch is fed to a continuous ammoniator where ammoniating solutions and water are added until a slurry of optimum consistency to produce firm, compact, uniform granules is obtained. This varies with formulation; too much liquid produces a soupy slurry and too little liquid forms a putty-like slurry. In operation

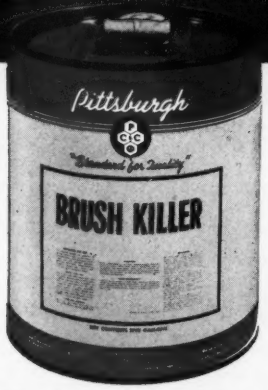
Flow Diagram of Granulation

Weighted batch enters hopper at 1 and end product follows arrow from 7-9 to storage or bagging. Key to numbered diagram: 1. Continuous ammoniator; 2. Inclined belt; 3. Continuous feeder; 4. Rotary drier; 5. Bucket elevator; 6. Rotary cooler; 7. Screen; 8. Swing hammer crusher; 9. Minus 20 mesh recycle; 10. High-volume, low-speed fans; 11. Dust collectors.



Sell More in '54!

Sell *Pittsburgh* Low Volatile BRUSH KILLERS!



Killing brush with chemicals is no longer a novelty. In 1954, more growers than ever will use this easier, more effective way of clearing fence rows, roadsides, ditches and pasture land. So be prepared to get *more* of these sales by handling *Pittsburgh* Low Volatile Brush Killers. Their new, improved low volatile Isooctyl esters give your customers maximum protection against vapor hazards. And this powerful *Pittsburgh* sales program gives *you* maximum assurance of healthy sales and profits!

(1) You can count on top quality and fast deliveries because we're a *basic* producer. (2) *Pittsburgh* Brush Killers are field-tested for peak performance right in your area. (3) A complete advertising program backs your sales to the hilt. Is it any wonder everyone's saying, "Sell *Pittsburgh* and you'll Sell More in '54!" Write for the complete story now!

WAD 5050

Standard for Quality

ORGANIC INSECTICIDES: Benzene Hexachloride, Toxaphene, and DDT.

ORGANIC PHOSPHATE INSECTICIDES: Parathion Wettable Powders, Parathion Liquid Concentrate, Systox.

WEED KILLERS: 2,4-D Acid, 2,4-D Amine Concentrates, 2,4-D Ester Formulated Concentrates, D4 (Low Volatile 2,4-D Ester), C4 Pre-Emergence Weed Killer, 2,4,5-T Formulations.

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Control Panel

Drier and Hammers

there is no difficulty in maintaining an intermediate position between the two.

The slurry is carried along an inclined belt to a continuous feeder and from there is fed to a direct heated, single shell, rotary drier, 5′ diameter x 25′ long, then to a 5′ diameter x 30′ long cooler.

Discharge from the cooler is elevated by a standard steel centrifugal enclosed bucket elevator to a double deck floor mounted vibrating screen.

Recycle Crusher

The small amount over 4 mesh is recycled to the process by way of a swing hammer rolling ring crusher with adjustable grinding plate set to reduce to size with a minimum of fines. Material passing through the 20 mesh cloth recycles directly to the slurry. Sized, round, uniform pellets are then sent to storage.

A counter-current air supply to the drier and the cooler reduces the product temperature to 120° F. when using ambient air at 70–75° F. as a cooling medium. Heat is lost because of direct heat loss to the air stream moving through the equipment and to the latent heat of evaporation. Air velocity is held low in the drums by utilizing high-volume, low-speed fans.

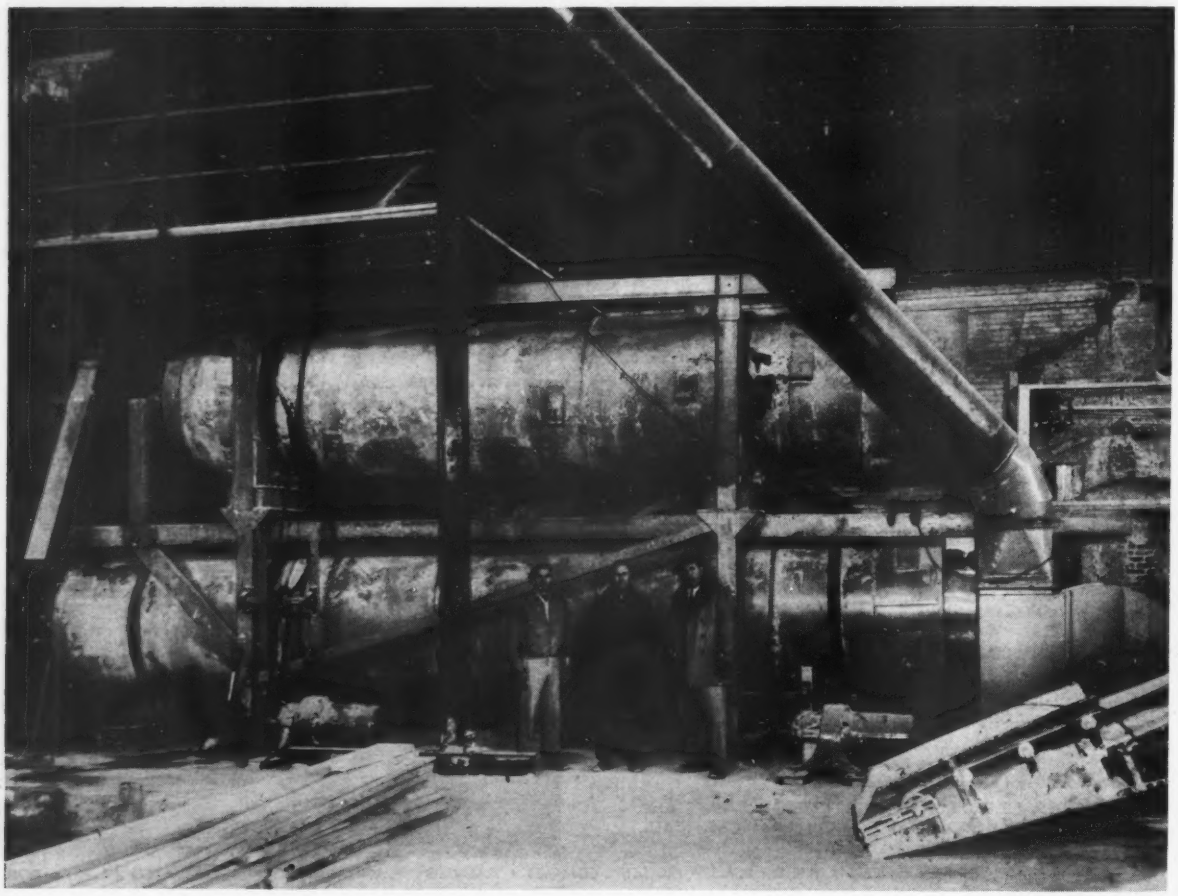
Dust Removal

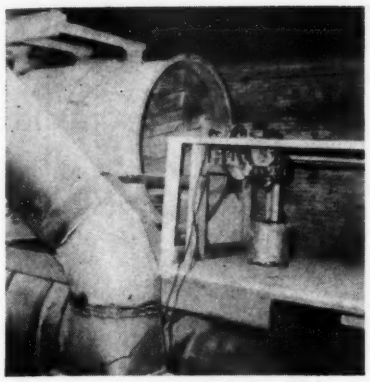
Dust is removed by two efficient self-cleansing cyclone dust collectors with discharge from both cyclones to process readily visible to the man in charge.

Combination magnetic line starters with push button in covers are mounted compactly on a central control panel to control the individual, totally-enclosed, dust tight motors which furnish a total of 80 HP to the unit.

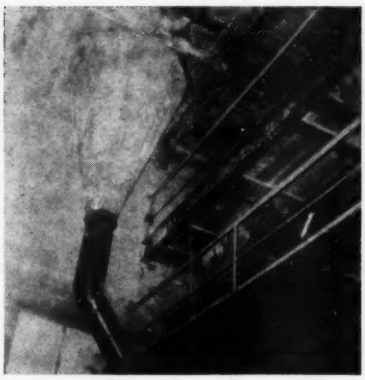
L. M. Oliver, director of research and development for the company was pleased to have the unit equipped with the rotary drum drier as an external means of drying to enable formulating mixtures

Al Osovski, plant superintendent; J. E. Madigan, Fertilizer Engineering & Equipment Co., and H. Litzelman, plant manager. Machinery shown includes the single shell rotary drier and cooler units in G. L. F. plant, Lyons, N. Y.





Drier-Burner Platform



8′ Cooler Cyclone

Lifting Flights in Cooler

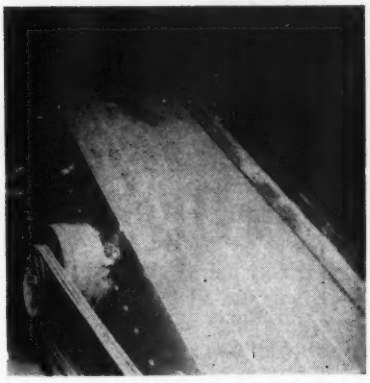
with or without highly soluble salts such as ammonium nitrate and urea. Securing a good quality product requires control of chemical reaction after mixing which means reduction of moisture, temperature and contact surface.

End Product

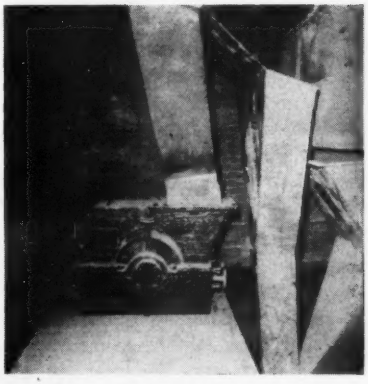
The finished product will test 2–2½ per cent moisture, 120° F. and screening prior to storing will place granules of approximately the same diameter into contact thus limiting points of contact between adjacent particles to a minimum. These round, uniform granules will be easily handled and will not cause the excessive fines found when handling sharp, irregular particles.

Production rates of 15 tons per hour on all grades and 20 tons per hour on certain grades will be possible. Hugh Litzelman, plant manager, believes maintenance will be reduced as the combination of a flexible shell with hammers keep the material cascading through the drums with little, if any, build-up. One man will operate the unit from the dryer platform where he controls the operation through the regulation of the oil fired burner.

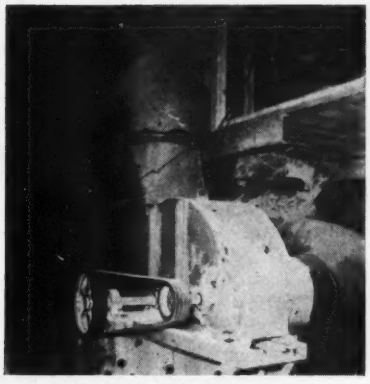
The unit was erected by plant personnel and placed in operation four months after the decision to go ahead was reached. Layout and supervision of the installation was done by Fertilizer Engineering & Equipment Co., of Green Bay, Wis. ◆



Vibrating Screen

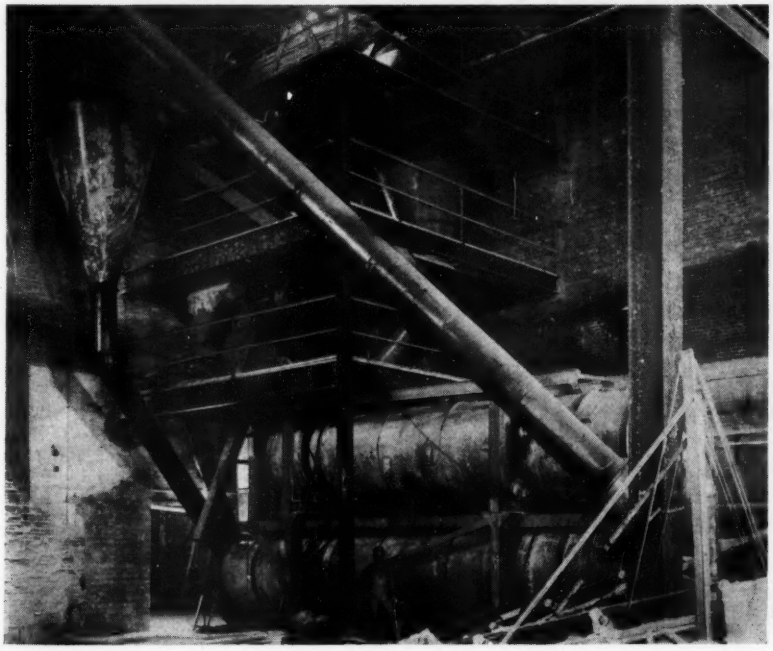


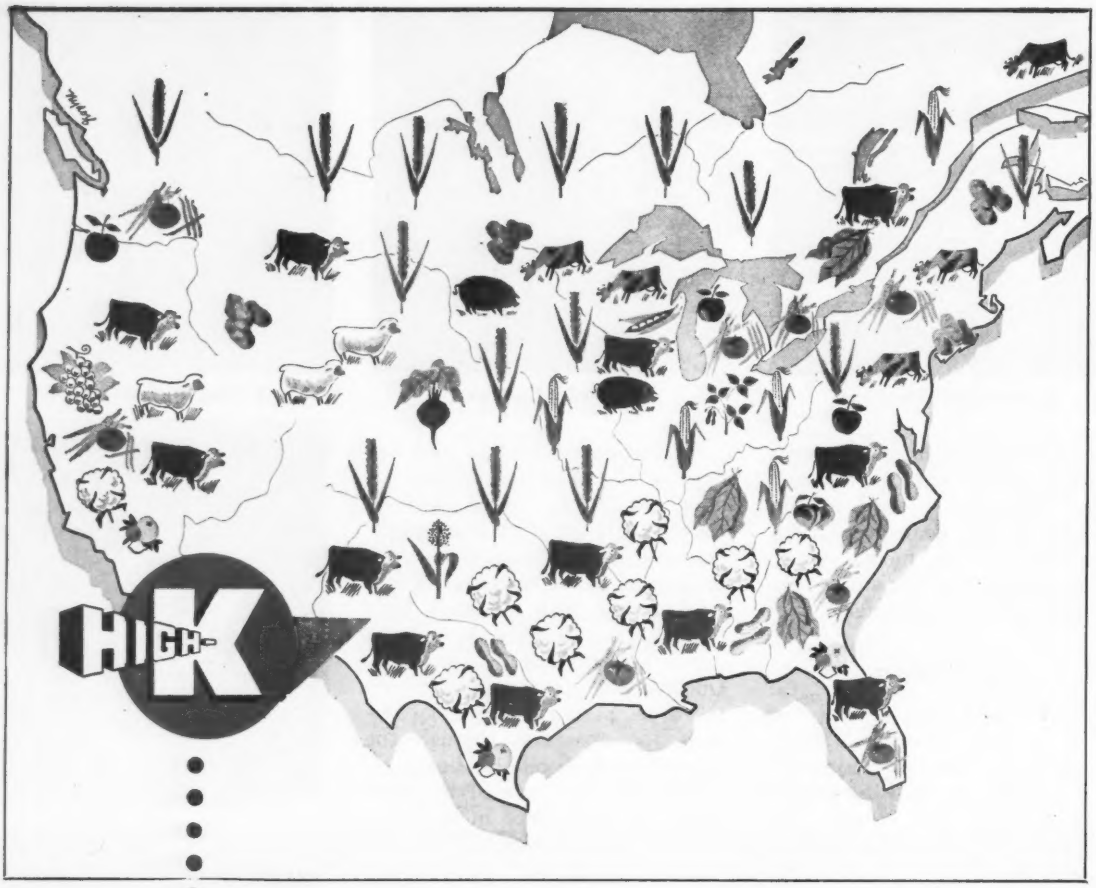
Pulverizer



11,000 6PM Blower

Overall view of the complete granulation unit which was erected by plant personnel. Supervision was by Fert. Engr. & Equip. Co.





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61 BROADWAY ★ NEW YORK 6, N. Y.

New Pesticide, Fertilizer Formulations at Recent

Garden Supply Show

SMALL package producers were well represented at the National Garden Supply Trade Show held Feb. 2–4, in New York City. They were among a large number of exhibitors showing their wares to garden supply dealers and distributors in the 71st Infantry Regiment Armory.

From the number of formulators offering malathion products, this versatile American Cyanamid chemical seemed to be the biggest item on display. Gardeners will be able to select emulsifiable liquid formulations in one ounce, four ounce, pint and quart sizes from a number of well-known lines, and at least one company will offer both wettable powder and dust mixtures.

Garden Cyanamid

Garden Cyanamid is being offered directly to the supply trade by American Cyanamid in 10, 25 and 50 pound bags. Available for years for farm use, this is the first time that it has been packaged especially for home applications.

The material is being recommended for lawn and garden weed control, speeding up decomposition of garden residues and cover crops, for use in compost production and, of course, for its fertilizer and liming value. National advertising and a cooperative advertising offer to dealers will help introduce the material.

One pound package of five per cent Dieldrin granular insecticide produced by Black Leaf Products division.

Acme Quality Paints was well represented with specimens of its attractive and complete line. Its three 1954 introductions include a 50 per cent malathion spray.

The Acme All Round Insect Spray is an aerosol formulation of pyrethrins, rotenone and piperonyl cyclone in a 10 ounce container. Convenience of use will be a major sales point.

Another Acme product, the All Round Pump Gun, is a formulation of Ferbam, rotenone and methoxychlor in an eight ounce duster gun. The product is labeled for use on flowers, vegetables and bush fruits.

Black Leaf Products

The Black Leaf Products division, Virginia-Carolina Chemical Corp. display featured a five per cent dieldrin granular insecticide produced by impregnating the toxicant on ground tobacco. Better control of soil insects in turf than with dusts or powders is claimed because the larger particles do not cling to grass blades, but fall to the soil surface for maximum benefit.

Labeling of the dieldrin product includes both lawn and flower garden soil application. For lawn use, application at one pound per 700 square feet is recommended with a stronger dose suggested for heavy growths of St. Augustine grass. Holes scored in the side of the box can be punched out to facilitate broadcasting the material.

Another new Black Leaf product was a 50 per cent malathion spray in a one pint glass container. Although not on display, a 25 per cent wettable powder of this insecticide, designed for orchard work, is being offered this year by the division.

Boyle Midway introduced a new Snarol Cutworm Bait based on toxaphene. It is marketed in one, two and a half, six and 50 pound packages. The company's Antrol aerosol bomb for African violets and house plants is expected to have wide acceptance among indoor gardeners. The formulation is a synergized pyrethrin-rotenone mixture.

Niagara Chemical division, Allied Chemical & Dye Corp. also showed malathion 50 in both four ounce and one pint containers. Its Pomo-Green compound is now being marketed in a one-half pound duster

carton, and the division is also introducing a Niagara Brush Killer in a small can.

This year, pictures of plants on which the formulations can be used have been added to a number of Niagara packages continuing a trend which has proven very successful since the idea was first used with the Copodust mixture.

Monsanto D-Leet and Bogey

Monsanto Chemical Co. displayed two new horticultural products in addition to the Krilium and Folium lines. A new herbicide, named D-Leet, is the only selective herbicide in the garden field to be based on the sodium salt of MCP. It is packaged in eight and 32 fluid ounce sizes.

Recommendations include use on lawn weeds, poison ivy, thistles and other nuisance plants.

Monsanto's Bogey is an all round pesticide containing DDT, rotenone, sulfur and Zineb in a formulation which can be used as a dust or spray. It is available in a special dust gun which permits the material to be directed at the undersides of plant leaves.

FTE and an Aphid and Mite Spray were featured in the DuPont display. The first is packaged in a one pound container and the spray in one and four ounce sizes.

The DuPont Garden Chemicals Product Selector, a simplified wheel implement, is a clever sales device which helps the user to select the correct answer (in DuPont formulations) to pest problems, soil conditioning, fertilizing and weed control.

Isotox Garden Spray

California Spray-Chemical Corp. offered for 1954 the Isotox Garden Spray containing lindane, malathion and DDD. The Isotox preparation formerly contained only lindane. CalSpray also introduced a pine container of malathion liquid and an Ortho Garden Fungicide with Captan, a wettable powder formulation.

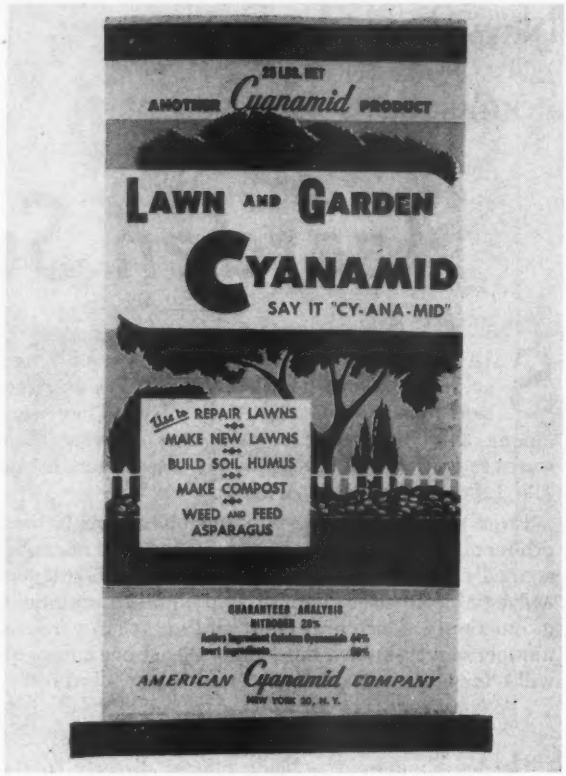
The CalSpray Ortho Dry Fertilizer, packaged in an eight pound box, was also on display. This plant food contains, according to the label, "organic fish, blood meal in a balanced fertilizer."

Also available at CalSpray's exhibit was a well prepared, 36 page booklet, the "Ortho Garden Digest," full of information on planting and care of ornamental crops. The publication has many excellent illustrations and plenty of hints on the use of Ortho products in the home garden.

Lebanon Chemical Corp., with one of the most attractive displays on the floor, introduced a 50 per cent malathion liquid in one and four ounce, pint and quart sizes. Its new formulations also included an ornamental spray with Captan, lindane and aramite in dust or wettable powder form.

B. G. Pratt Co. was another of the formulators carrying malathion products, in containers ranging from one ounce bottles to five gallon drums. A Rose and Floral Spray containing synergized pyrethrum-rotenone is being packaged in a 10 ounce aerosol container for indoor or outside use.

The Pratt concern was one of several offering a sodium arsenate weed killer. Its product is available in quart and gallon cans and five gallon drums.



Garden Cyanamid from American Cyanamid available to the garden supply trade in 10, 25 and 50 pound bags.

The Kapco line of fertilizers and pesticides was well displayed by the Kapco division of Summers Fertilizer Co. This is the former Kelly Agricultural Products Co. of McKeesport, Pa., and was taken over by the Baltimore concern last October.

New Kapco Products

One of its new introductions is Kap-Organic, an activated sludge compound claimed to have the highest analysis of any such product now on the domestic market. The analysis runs five per cent nitrogen and from five to six and a half per cent phosphoric acid.

Kapco also added a House and Garden Dust in a four ounce sifter top container. The material contains chlordane, rotenone, aramite and sulfur. Kapathon is its malathion formulation available in two and four ounce sizes.

Heller-Gro, the paste fertilizer which was the subject of a FARM CHEMICALS feature last month, was also on display at the Heller Greenhouse Laboratories booth.

Other farm chemicals companies present at the New York show included Armour Fertilizer Works; Bonide Chemical Co.; Andrew Wilson, Inc.; Bostwick Laboratories; Bonide Chemical Co.; Doggett-Pfeil Co.; Faesy & Besthoff, Inc.; Garfield-Williamson; Goulard & Olena, Inc.; McCormick & Co., Inc.; Nott Manufacturing Co.; Nutritional Concentrates, Inc.; Rapid-Gro Corp.; Rose Manufacturing Co.; Science Products Co.; Seacoast Laboratories, Inc.; Swift & Co., Plant Food division; Stimuplant Laboratories and Valley Feed & Supply Co. ◆

Progress & Problems

By Paul Mayfield

President
National Agricultural Chemicals Association

THE entomologist has become within these past 10 or 15 years a leading advocate of the proper use of farm pesticides which have been tested to his complete satisfaction and which meet the standards of efficiency and safety he has set. He is consulted on the best way to combat not only cotton insects, but the many pests that plague the nation's farmers and eat up their income.

I have seen it estimated that the work of entomologists, chemists and others in developing materials for the control of crop pests has increased the farmer's protection some 50 per cent in the past 50 years. Certainly in the past 10 to 15 years, with the newer organic insecticides available, the increased yields have been so noticeable that everybody talks about it.

Much Misinformation

And because everybody talks about it—there is a great deal of misinformation, downright exaggeration and pseudo-scientific double-talk that is giving both the entomologist and the pesticide manufacturer an undeserved black eye.

The man of science is always the target, along with the business man, whenever the public is stirred up by false propaganda against something "new" that represents

From "Problems and Progress of the Agricultural Chemicals Industry" delivered to the Cotton States Branch, Entomological Society of America, Biloxi, Miss., Jan. 25, 1954.

Dr. Paul Mayfield

the achievement of science translated by industry into a product for use. That is why I say that while entomology embraces a wide scope, today the spotlight is upon the work you do in controlling insects—just as brightly as it shines upon the work we do in producing and developing pesticides.

We have, therefore, much the same problem. We must see to it that the spotlight shines favorably. We must tell the public how the use of pesticides has produced more food, how it has reduced the loss in human life from diseases like malaria, how it has increased our standard of living.

Emphasize Safety

Even more important, we must show that pesticides are able to be used without endangering public health. We must emphasize that the entomologist and the pesticide manufacturer are fully aware of their responsibility to the American people and have worked closely with Federal and state legislafors to secure the adequate legal protection now in existence which assures the public a safe food supply.

We must show the public how pesticides carry all necessary precautions as to their proper and safe use. We must explain that for a pesticide to be sold in interstate commerce, it must be registered by the USDA.

We must explain further that in order to obtain such registration, the manufacturer must prove that the material, used according to directions, will give effective control without harming the crop or the individual applicator, nor will it leave residues of the chemical on the plant that will be harmful to the consumer of food products.

For while most of you* have concentrated on the use of cotton pesticides, it is certainly true that fruits, vegetables, nuts, legume crops and livestock are raised in your states, and pesticides have been recommended and applied.

When hysterical and unwarranted charges are made about "chemicals poisoning food," they are just as likely to originate in your area as any other. These crackpot criticisms sometimes get wide publicity, and unless you join us in denying these allegations and telling the true story, there is a chance that the progress made in educating the farmer will be seriously retarded.

To many of you, this is not a completely new responsibility. You have been advocating the use of pesticides to aid the farmer, and you have had to prove that these materials will help him without hurting others.

We have tried to help you in this educational work. We intend to keep on doing so, even stepping up our efforts, for there is much work

* Entomologists of the Cotton States Branch, ESA.

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to be done. When we speak of the public being misled by scare stories about chemicals on foods, we mustn't forget that the majority of our farmers apparently are not yet convinced that pesticides are a good investment. Less than 15 per cent of this nation's cropland is protected by pesticides, although this is the finest and least expensive insurance the farmer can buy.

For example, the average yield per acre in certain areas of South Carolina was 400 lbs. of lint. In these same areas, under experimental conditions, the proper use of pesticides and fertilizer gave a yield of more than 1600 lbs. With correct management and reasonable pest control, it is possible and economically feasible to increase the yield by at least one third in this and other cotton-growing areas.

Even in the cotton-growing areas, where the tonnage of insecticides is high, it would be rare to find a section where all growers regularly use pesticides. This almost seems incredible, in the face of the abundant evidence that there now are many dusts and sprays which give safe, economical protection against cotton insects and which pay for their cost in the higher yield per acre. Yet the fact remains that the whole pesticide industry is selling much less than its potential in the one area of the United States that is most alert and educated on the value of insect control.

Not only are there too few farmers using these materials, but many that do use them are not using them in sufficient quantity or in the most effective manner to derive the maximum amount of return from their investment in farm chemicals.

We must keep on telling the farmer that pest control is the way to higher yields. Today, he spends money for fertilizer and then neglects to spend a little more cash for the recommended pesticides that could help him harvest a good crop.

Education Needed

It would appear that we have to sell the value of pesticides to many farmers, just as much as we

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have an educational job to do with the consumer. We have an educational job to do with the consumer of food products.

The pesticide industry now offers farmers the widest variety and most effective crop protectants ever known in the history of agriculture in this country or in any other country.

From approximately 150 basic chemicals we are offering some 25,000 different formulations for use on the farm. Many of them are highly versatile in the range of pests which they will control and in the weather conditions which influence their effectiveness and conditions of application.

Even though we now have adequate manufacturing facilities, the basic chemicals and a reasonable quantity of stocks of pesticides on hand, it does not necessarily mean that the farmer will be able to control completely his agricultural pests at the time he desires.

Efficient Distribution

We must still have an efficient distribution of these products which requires the cooperation of the dealer selling these products and of the grower who uses them.

Because of the very seasonal nature and the unpredictable size of infestations, our industry has found it necessary to maintain unusually heavy stocks of farm chemicals when compared to other phases of the chemical industry.

Many of you recall that during the war years and immediately following the industry, agricultural leaders, farmers and dealers all worked together to have an available stock of crop protectants on hand in advance of the season to handle at least part of the requirements which could be anticipated.

During 1953, this early purchase program completely broke down and several serious incidents occurred in which heavy outbreaks of pests in some areas of the United States rapidly depleted dealers' stocks and serious crop damage was imminent. The industry took extraordinary means to replace those stocks on very short notice and managed to prevent severe losses to crops in those areas. Bear in mind that we were able to do this because we entered the 1953 season with the largest inventory in the history of our industry. Such is not the case in 1954.

Industry More Cautious

The oversupply of chemicals which built up during 1952 and 1953 has caused manufacturers to take a thorough look at the situation in this phase of the chemical industry. Industrialists are approaching the 1954 season with a great deal more caution than was displayed in the past two years of our experience.

The former president of NAC advised the industry at a meeting last September that the relationship of investment in inventory stocks to the net sales dollar was nearly twice that of the chemical industry as a whole. This information has had real effect on the inventory which will be carried by our industry.

It is time again to reinstate the "Buy Early" program and here is where you can be of real help to the farmer and to the industry. As you know, cotton as a crop requires the largest tonnage of insecticides of any crop of the United States. The movement of insecticides in this area determines to a large extent the sales and profit picture for the entire industry. You, who are working with the grower, should make sure that he has at least a part of his pesticide requirements on hand at the beginning of the season.

Along with the problem of distribution and inventories, there is the ever-mounting cost of our research and development. It costs several hundred thousand dollars, at the very minimum, to bring a new farm chemical up to the stage of commercial production.

High Efficiency Standards

The standards of efficiency are now so high that none of us seems satisfied with an insecticide unless it gives at least 75 per cent control; and unless there is that assurance of effectiveness, the chemical will not ordinarily be considered for further development.

Over and above these considerations, there are the long and expensive tests to determine its toxicity to man, animals and plants. We in the industry recognize the need for such cautious and thorough investigations before a new material is put on the market, but it does not take much pencil work to figure that a great quantity of a new product must be sold afterwards before the investment in research and development can be recovered.

Legislation which is before Congress at the present time will correct some of the costly and cumbersome procedures which have previously been necessary to obtain pesticidal residue tolerance under the Food, Drug and Cosmetic Act of 1938.

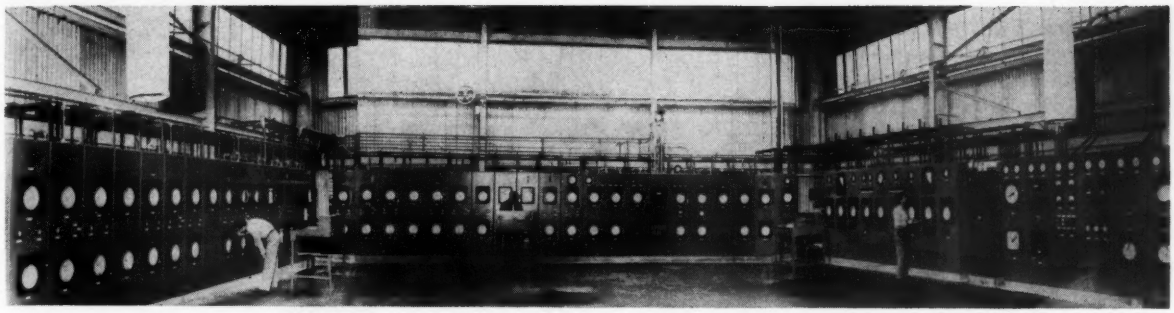
The bill will also, if it is adopted, treat pesticides separately from other chemicals used in the processing and preserving of foods. However, the manufacturer will be required to furnish sufficient information to the Food and Drug Administration to establish that a farm chemical can be used in such a manner that either no pesticidal residues will result or that the residues which do result will occur on foods or food products in amounts which are not detrimental to the public health.

To meet these requirements of the Food, Drug and Cosmetic Act will require continued extensive studies as to toxicity prior to the marketing of chemicals in interstate commerce.

Then, too, we must not only comply with the Federal insecticide law, but also with the laws of the individual states. The NAC has made much progress in getting the adoption of a uniform state insecticide law in many states.

The problems I have touched upon are all involved in the business of making and selling pesticides, and we in the industry are willing to abide by the rules of the game. All we ask is that the rules be fair; fair to the public and fair to those of us who are devoting our professional and business careers to this work.

Our ultimate goal, of course, is the perfection of a pesticide that has maximum efficiency, is economical to use, can be manufactured, transported and applied with complete safety. Such a pesticide would not injure beneficial insects, nor would it disturb the balance of nature. It would not leave harmful residues. It would be the truly perfect pesticide. ◆

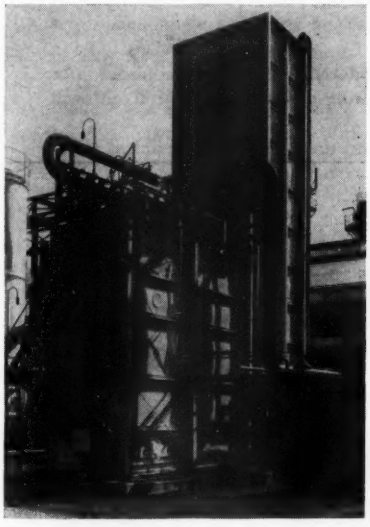


Automation in action at Vicksburg Works. Main control panel in the ammonia plant operates boilers, air separation and gas generation and purification. From the works manager to the last janitor, only 110 persons are employed.

Spencer Opens Vicksburg Works

PRODUCTION has begun at Spencer Chemical's newest production unit—the anhydrous ammonia plant at Vicksburg, Miss. This is the first plant to use commercially the partial oxidation process, although others of this type are under construction.

According to Kenneth A. Spencer, president of the company, "the outstanding feature of this new works is its high degree of process coordination." Spencer pointed out that because of the simple design, compact layout and extensive use of automatic controls, the operating personnel will be only about one-third of that required for a conventional plant of similar capacity.



Oxidation Process

In the partial oxidation process, about 1,000 tons of air per day is liquefied and then separated, by fractionization, into nitrogen and oxygen. The latter is utilized to partially oxidize natural gas, releasing hydrogen.

From this point, conventional methods of purification, compression and synthesis are used to create ammonia from the hydrogen and nitrogen.

The partial oxidation method is the result of research and development by Texaco Development and the Hydrocarbon Research Corps. Plant design was by Spencer Chemical and construction by its wholly owned subsidiary, Quaker Valley Constructors, Inc. The Foster-Wheeler Corp. was retained as engineer and constructor for specialized portions of the work.

Original cost of construction estimate for the works was $14 million, but company executives say that the plant will be completed for something less than this figure. The Vicksburg Works was designed to produce about 72,000 tons of ammonia per year.

Ammonia Products

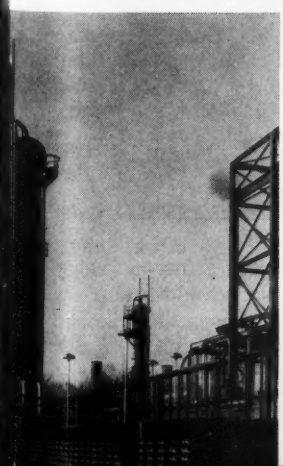
From the ammonia, Spencer will produce nitric acid, ammonium nitrate solutions and Spensol solutions. At least half of the nitrogen products manufactured at Vicksburg will be used for agricultural purposes. ◆

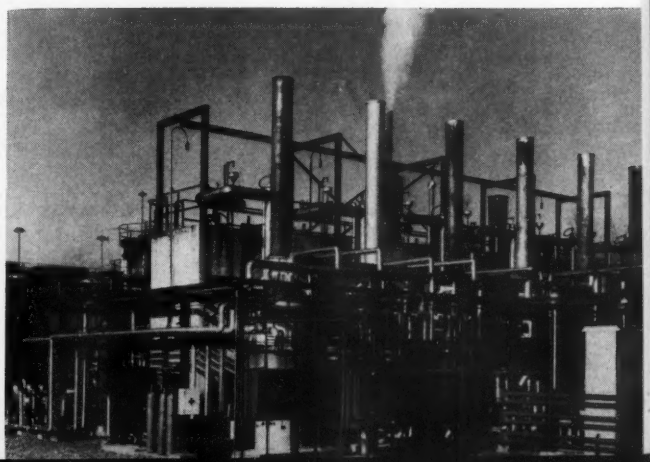
Left: Air separation plant processes 25,000,000 standard cubic feet of air per day. Nitrogen produced is 99.99% pure.

Bottom left: Amine reactivator. Amine is used in purification to remove CO_2 from hydrogen taken from natural gas.

Bottom center: Nitrogen wash tower used in final stage of hydrogen purification at Spencer's new Vicksburg works in Miss.

Bottom right: Natural gas preheaters and hydrogen generators. Natural gas and air are the raw materials used.





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Packaging Exposition

AMA Show Features Trade Displays, Exhibit and Annual Conference

THE American Management Association's 23rd National Packaging Exposition, April 5–8, will be the largest in the history of the event, according to AMA spokesmen.

One of the biggest trade shows in the country, it will be held in the Convention Hall at Atlantic City, N. J. as a highlight of National Packaging Week. Also on the agenda is the annual AMA Packaging Conference to be held April 5–7, in the Convention Hall ballroom.

At last year's record breaking event, 350 firms utilized 125,000 square feet of Chicago's Navy Pier to display their wares and the exhibitors list for the current show is said to be 15 per cent over that of 1953.

Reflecting the continuing trend toward mechanization of the packaging operation, there will be more materials handling equipment on display than in any previous year.

Rounding out the affair will be a Packaging Conference Exhibit of printed and other visual materials illustrating solutions of packaging problems. This will consist of forms, brochures, instruction manuals, reports and other materials related to packaging, packing and shipping, gathered from member companies of the association.

Packaging Conference

A two and a half day program for the Packaging Conference will include speeches and panel discussions on topics ranging from production problems and personnel to merchandising and materials handling techniques. Many of the items on display in the exhibit will be tied to topics discussed in the conference sessions.

Among the highlights will be case-study reports by Monsanto Chemical Co., Sears, Roebuck & Co. and Kraft Foods Co.

Monsanto representatives are scheduled to reveal the evolution of many notable new packaging methods and will outline the firm's complete packaging program showing the contributions of each company department.

Speakers from three other firms, selling diverse industrial products, will discuss industrial packaging problems in their respective organizations. The how and why of their packages will be explained with emphasis on out-of-the-ordinary solutions to specific problems.

Future in Packaging

Other conference sessions will be devoted to the future in packaging, including a forecast of developments that may occur in the near future with explanations of how these innovations may alter present policies and practices.

The program was planned by the association's Packaging Planning Council, a group of 21 executives of AMA member companies headed by J. A. Warren, American Home Products Corp. and AMA vice-president in charge of the packaging division.

The increasing economic importance of the packaging function was recently emphasized by Floyd L. Triggs, advertising manager, Riegel Paper Corp. and chairman of the Exhibition's Exhibitors Advisory Committee.

Triggs stated that the principal current trend in packaging is a concentrated effort to deliver the expanded production of industry to the consumer in better condition and at lower cost. He suggested that product improvement rather than price cutting might be the answer to buyer resistance.

Increased Truck Use

Another trend with important implications for packaging is the greatly increased use of motor transport for shipment of goods, said Triggs. He stated that companies are already finding it necessary to reappraise their shipping containers in the light of trucking requirements. The resulting changes in container design, including smaller size, may be carried back to the original product package.

The items on exhibit and the show, Triggs forecast, will reflect continuing stress on unit packaging within a mother package and on mechanization of every conceivable packaging operation.

John Warren reports that competitive pressure is stimulating increased research to find new uses and markets and to improve packages and equipment.

He added that better coatings, linings, alloys, films and paper products are enhancing the physical and protective properties of packages, in many cases at reduced cost.

Mechanized Operations

More packaging operations are being mechanized, he said, and equipment to run at greater speeds is continually being developed. Warren also pointed out that the newer machines also require less maintenance and are adapted to operation by less highly skilled personnel.

In terms of merchandising, he stated, packaging is entering a new era. Manufacturers are realizing that the packaging is the final contact with the customer and must do a final selling.

As a result they are designing packages that reflect the manufacturer's integrity, the product's quality level and a tie-in with advertising for visible memory retention value. ◆

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Southwest offers big future for chemicals in

Range Brush Control

By A. H. Walker
Extension Range Specialist
College Station, Texas

THERE is a big future for farm chemicals in the South, a future some authorities estimate may give the livestock industry another third of a billion dollars. This tremendous boost to livestock earnings is possible if brush can be controlled.

While chemicals are not the only answer, they are proving to be a practical method of ridding the land of brush, which with weeds takes four barrels of water from the soil for every barrel removed by growing crops and grasses.

Research men like C. E. Fisher at Spur, Tex., have been busy for a number of years trying out various chemicals in actual practice before the Texas Agricultural Experiment Station would be willing to make recommendations regarding their use. Here are some of the things they wanted in a chemical to control brush:

In the first place it had to be nonpoisonous to man or livestock. Too many animals have been killed by the old arsenic method of killing trees.

Next, the chemical had to be effective under a wide range of conditions.

The method should be cheap. Owners don't want to buy their land again getting rid of the brush.

It should be easy to apply with ordinary labor.

Finally, the chemical should not damage cultivated crops or grass that is growing on surrounding areas.

Although present chemicals do not meet all of these requirements, they do meet enough of them that they can be recommended for use.

Application Methods

Chemicals may be applied by broadcast methods or individual tree treatment. Tractor or jeep drawn power spray equipment can be used on low growing brush or following mechanical control work. Aerial application provides economical and rapid coverage of large areas of moderate or heavy brush. Such broadcast methods have certain limitations, however. According to current research, they must be applied when the brush is in full foliage, only give control of certain kinds of brush and with 2,4-D or 2,4,5-T should not be used in susceptible crop areas.

Spray solutions can be applied to individual plants with a hand, back type or cattle sprayer. This type of equipment is suitable for scattered individual foliage treatment on seedlings or small brush and for frill, trunk base and stump treatment (Figure 1). The Cornell tool has given good control of individual trees using either arsenic or Ammate solutions in the South.

Sagebrush, mesquite, blackjack and post oak are the only species recommended at this time for aerial control in the South. Extensive brush control research conducted at the U. S. Southern Great Plains Field Station at Woodward, Okla., shows that three-fourths of the sand sagebrush can be killed with one proper aerial application of 2,4-D.

Forage and beef production is increased from 50 to 75 per cent if grazing is light or summer deferment is practiced following treatment. Sagebrush spraying on experimental areas has paid the complete cost of spraying the first year following treatment for 10 years of record.

Mesquite Spraying

Over one million acres of mesquite have been aerially sprayed in Texas during the past three years with ½–¾ lb. of 2,4,5-T acid per acre in diesel oil at a cost of $3 to $3.50 per acre. Top kills average approximately 90 per cent and root kills 40 per cent. Mesquite is the biggest one species problem in Texas, or the South, because it comprises a dense stand on 35 million acres and scattered stands on another 15 million acres.

Mesquite is a prolific sprouter from the bud zone. Stage of growth, moisture condition, size of trees and management following treatment largely determine the benefits derived. Grass growth and beef production have been materially increased on all areas sprayed and the writer has yet to visit an area on which mesquite spraying has not paid for itself.

Aerial control of post oak and blackjack oak has been tried on a limited scale. It appears practical and economical. One to two pounds of 2,4,5-T acid per acre should be applied after plants have reached full leaf in the spring. The cost varies from $5 to $9 per acre, but this area has more favorable rainfall and will produce more forage per acre than western mesquite areas. It should be emphasized that

for both mesquite and oak, control, rather than eradication, is the result. Additional sprayings will be necessary to control regrowth.

More Research Needed

Can all kinds of upland and bottomland hardwoods be aerially controlled economically? There is a need for more research on this problem. Aerial control is the cheapest method known with the limitation that acreages must be large and no susceptible crops close by. One private test using 2,4-D and 2,4,5-T applied to bottomland timber in late March, 1953, before cotton was planted indicated 70 per cent kill at a cost of $5 per acre for treatment.

Possibly hardwoods can be controlled by aerial application of 2,4-D, 2,4,5-T or MCP on timber areas. Earlier research indicated these chemicals would kill pines but later work makes researchers wonder. These possibilities should be fully explored.

Chemicals may be applied to the foliage of individual trees, to the cut-off stump, trunk base of standing trees, in cups or in frills. Ammate and 2,4,5-T ester are the most widely used and accepted chemicals. In Texas and Oklahoma, 2,4,5-T generally has given cheaper and more effective results with less labor.

Ammate is mixed with water and 2,4,5-T with water and/or oil for foliage application. Thorough coverage is essential and the plants must be in full leaf for best results.

Stump treatment using Ammate crystals or 2,4,5-T ester diluted in diesel oil or kerosene gives good control of sprouting for most species (Figure 2). Trunk base treatment using 2,4,5-T in oil gives good results on trees under six inches in diameter but some species require twice the concentration of chemical as others (Figure 3). Ammate crystals in cups spaced not over six inches apart and close to the ground control sprouting on oak species.

2,4,5-T Shows Promise

A solution of 2,4,5-T in oil applied in single overlapping ax cuts shows much promise of cheap, effective control of all kinds of trees. Ammate in water applied in frills reduces sprouting and releases timber growth.

Actually, brush and weeds use one-third of all precipitation received. We hear a lot about unused run off and find in Texas that three times as much water is utilized by worthless brush and weeds as runs off down our rivers. We have a potential of four times the production in Texas if this water could be properly utilized. Lack of adequate water is not such a problem in all the other states but neither is the brush problem so immense, because Texas alone has some 65 million acres infested.

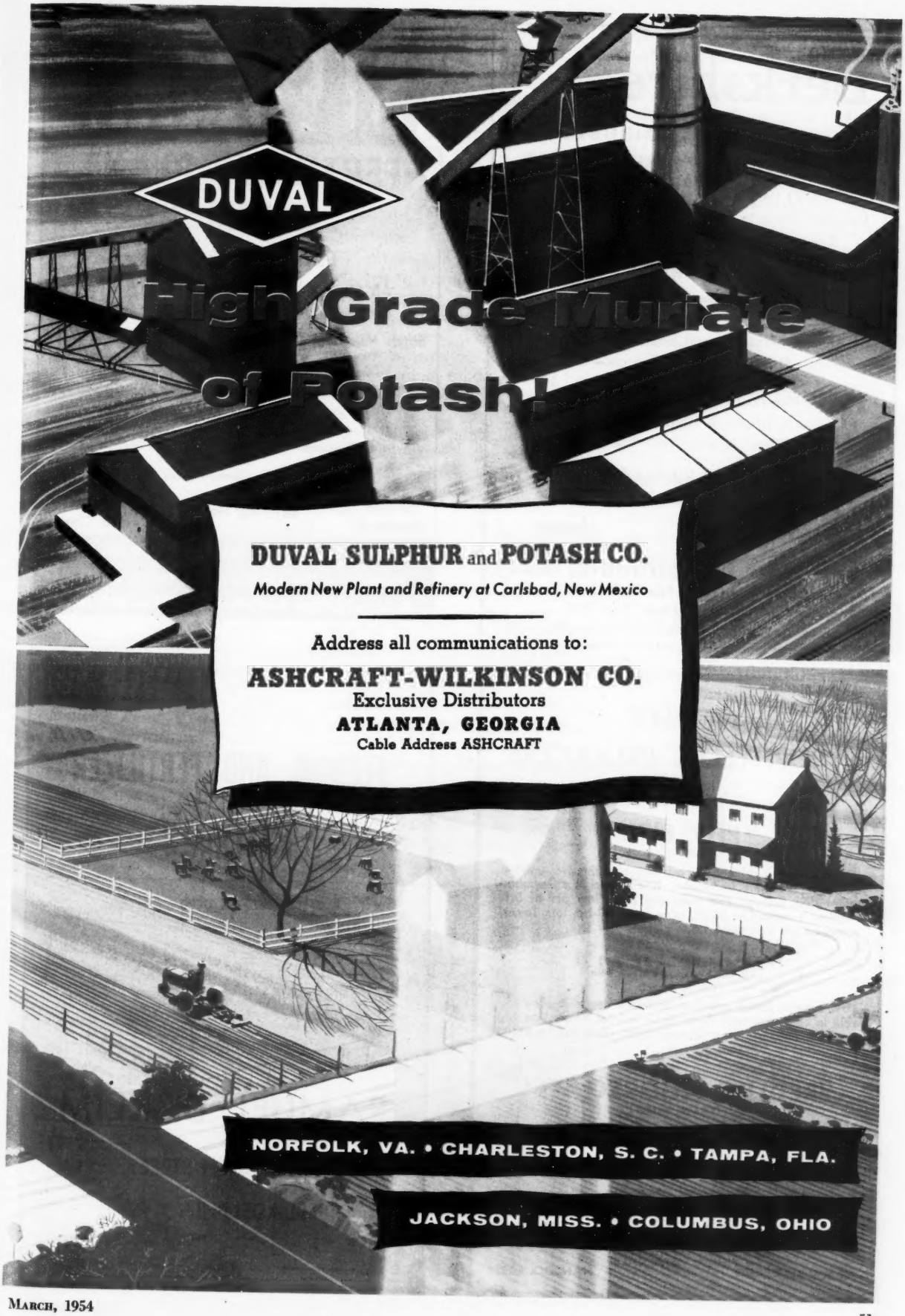
Sometimes brush infestation is so heavy that livestock handling is made difficult. Often this brush grows on some of the most productive land. In timber areas, hardwoods often hold back or crowd out desirable pine trees. Control of hardwoods to increase the quantity and quality of forage production, make livestock handling easier and in forest areas to release timber growth is both practical and profitable. Some brush controlled areas have produced five times as much grass as untreated areas the next year even under drouth conditions.

Average production increase following woody plant control usually varies from 20 to 50 per cent, depending upon rainfall, site and management practices.

This means more pounds of meat per acre and increased efficiency of production which is most important today. ◆

Hand sprayers are convenient for treating individual trees. Using 2, 4, 5-T in a frill gives good results on trees over 6 inches dia.

Spray of 2, 4, 5-T in oil on cut-off surface and sides of stumps will usually control sprouting.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Pest Reports

'Hoppers' Increase In Certain Sections

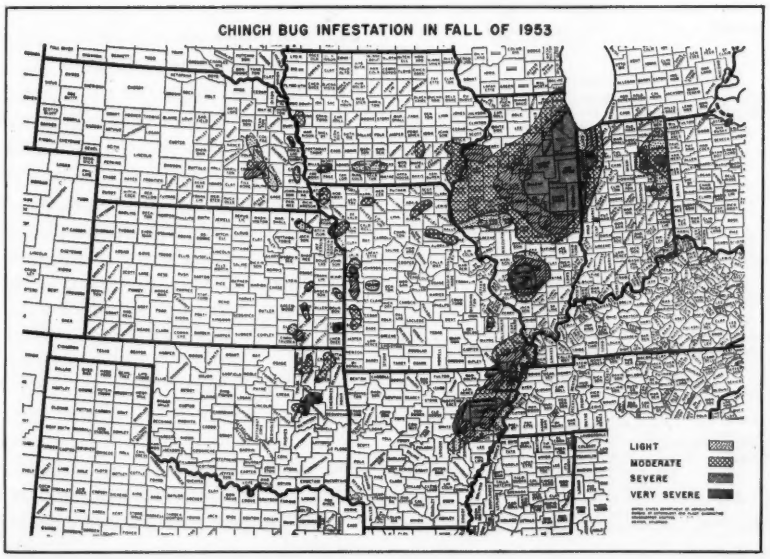
Information recently released by the Grasshopper Control Project on surveys jointly conducted by the project and cooperating state agencies states that grasshoppers are on the increase in various areas. Crop land area surveys show that there are build-ups in portions of southeastern Nebraska, eastern Kansas, southern Iowa, the entire state of Missouri and central Wisconsin.

The infestations ranged from light, three to seven per square yard, to very severe, 28 or more per square yard. The greatest increase in populations appeared to be in Missouri and Wisconsin. In the rest of the states in the western half of the United States, crop land infestations generally are scattered and local.

Grasshopper infestations serious enough to warrant large-scale control programs on range land areas in 1954 are expected in 13 of the western states. These infestations cover approximately 4,733,240 acres of range land. Of this total 2,636,610 acres are private lands, 604,150 acres state lands and 1,492,480 acres public domain. The latter lands are under the management of the Forest Service, USDA and Indian Service, Department of the Interior.

In Arizona, California, Nevada and Utah, 329,140 acres are private lands, 2,000 acres state lands, and 495,100 acres public domain. Idaho, Montana, Oregon and Wyoming have infestations on 168,020 acres of private land, 24,200 acres of state land and 369,780 acres of public domain. In Nebraska, 400,000 acres of private sandhill range are infested. Colorado, New Mexico, Oklahoma and Texas have infestations totalling 1,739,450 acres on private lands, 577,950 acres on state lands and 627,600 acres on public domain. The most urgent situation from the standpoint of need for organized control efforts in 1954 appears to be in north central New Mexico, south central Colorado, central Idaho and the panhandle areas of Oklahoma and Texas.

Based on material received from Economic Insect Survey Station, Plant Pest Control Branch, Agricultural Research Service, USDA, supplemented with information received by FARM CHEMICALS *from Federal and state agencies.*



Chinch Bugs May Be Important in '54

Chinch bug surveys were conducted in the following nine states in the fall of 1953: Arkansas, Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska, Oklahoma and Wisconsin. Results of surveys as reported by the states following their processing of the soil samples collected indicate that these bugs could be of economic importance in 1954 in northeastern Arkansas, southeastern Missouri, northern Illinois and northwestern Indiana, with local trouble spots in northeastern Indiana, south central Illinois, east central Oklahoma, southeastern Kansas and southeastern Nebraska. These areas are shown on the accompanying map.

Fall Weevil Counts

Georgia Agricultural Experiment Station at Experiment reports that fall examination of surface trash from woods adjacent to old cotton fields, to determine the number of boll weevils entering hibernation, were made in three regions in Georgia from Nov. 24 to Dec. 31, 1953. The average for the state was at the rate of 1,984 live weevils per acre of surface trash. This compares with 1,346 weevils in 1952. Weevils have increased at the rate of about 500 per acre for each of the last three years.

Averages for the different areas where samples were taken were as follows: northwest (Gordon county) 3,049; north central (Spalding county) 1,500 and east central (Burke county) 1,404. A total of five samples or 90 square feet were taken from each of 30 farms. Live weevils were found on 22 farms or 73 per cent of those examined. The maximum number of weevils per acre found on one farm was 15,488 in Gordon county. This is the highest individual count made during the last several years. At least one farm in each county showed over 5,000 weevils per acre.

The 1953 fall hibernation counts in Madison parish, Louisiana were

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COP-O-ZINK NEUTRAL COPPER ZINC

COP-O-ZINK is a new, neutral copper-zinc fungicide containing 42% copper and 11% zinc. COP-O-ZINK gives a superior performance in control of fungus diseases. COP-O-ZINK composition of two essential elements gives it added value in correcting deficiencies of zinc and copper and in stimulating plant growth. COP-O-ZINK is compatable with all inorganic and organic insecticides. No lime is required. For use in spraying or dusting.

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NU-Z contains 52% metallic zinc. It is a neutral zinc compound which does not require the addition of lime for direct foliage application. NU-Z gives excellent coverage and adherence to plant foliage, thus rendering it available over a longer period of time. Safe for direct application. For zinc deficiency and plant nutrition—use as a spray or dust.

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considerably higher than those in 1952.

Fall hibernation counts made by A. P. Morris in McNairy county, Tenn. indicate there will be few boll weevils in the cotton crop of that state during the early part of the 1954 growing season. Counts made on 100 samples from 20 fields showed an average of only 31.1 boll weevils per acre in hibernation, fewer than during the two previous years. The average for 1951 was 239.4 weevils per acre and 2,259.9 per acre in 1952.

The very small size of the population found in hibernation last fall can be explained by the extremely dry weather that prevailed in the county from July until November 22. Because of this drought, there was very little secondary growth in the cotton fields after the regular growing period ended and, consequently, no squares of food for a large population to develop in, as happened the preceding fall. There were many weevils in the fields during picking. Adults could be found in dried-up bolls that were partly open, stunted, or aborted but that were still on the stalks. These, however, are believed to have starved as there was practically no suitable food in the fields for them.

Borer Hibernation Up in Some States

Survey information collected by state agricultural agencies and the USDA to determine the distribution and fall hibernation of the European corn borer has been compiled by the Section of Cereal and Forage Crop Insect Investigations. This pest is now known to be in 37 states.

Wyoming was found infested for the first time in 1953 when infestation was found in three counties of the state. Other states reporting additional counties infested for the first time were Arkansas four counties, Colorado one, Kentucky six, Maine one, Michigan one, North Carolina 18, Ohio one, Oklahoma one, South Dakota two, and Virginia 17. This makes a total of 1,557 counties in the United States now known to be infested.

The 1953 European corn borer hibernation surveys were conducted after mid-September and therefore measured the fall population of borers. They were made in 26 states and included examinations in 726 counties.

Most severe infestations, over 300 borers per 100 plants, were largely confined to two areas. One comprised adjoining areas in southeastern South Dakota, northeastern Nebraska and northwestern Iowa. The other formed a band one to two counties wide across Illinois from Burlington, Iowa, to Kankakee, Illinois. These two main areas were joined by a large number of Iowa and northern Illinois counties having averages of 101–300 borers per 100 plants.

In Eastern United States, as a whole, the average number of borers per 100 plants was practically the same in 1953 as in 1952. In four of the 13 states comprising the area, Delaware, Maryland, Rhode Island and Virginia, the average was higher in 1953 than in 1952. The increase in the number of borers in 1953 over 1952 for Delaware was 35 per cent, for Maryland 28 per cent, for Rhode Island 40 per cent and for Virginia 21 per cent. The heaviest infestations were in southern Delaware and adjoining counties in Maryland.

For the North Central States the average number of borers per 100 plants was higher in 1953 than in 1952. As in 1952, South Dakota (eastern half) was again the most heavily infested state in 1953, with an average of 258 borers per 100 plants, an increase of 24 per cent over 1952. Illinois had an increase in 1953 of 157 per cent over the 1952 infestation, Indiana 62, Iowa 79 and Nebraska 217. For the area as a whole the infestation in 1953 increased 35 per cent over what it was in 1953.

The average number of borers per 100 plants for all comparable counties surveyed in the country increased 28 per cent in 1953 over 1952.

The accompanying map shows the hibernation abundance of the European corn borer in the fall of 1953.

A MORE effective insect pest-reporting service is expected to result from the work of full time state survey supervisors sponsored jointly by USDA and state agencies. Supervisors have already begun work in seven states and are expected to be on the job in several others in the near future.

These employees will encourage Federal, state and industrial entomologists to observe and promptly report on insect activity and will assist in making insect surveys. Their reports will receive immediate distribution within the state and will be sent to USDA for compilation in the national weekly report.

Armyworms in 1953

Pest-control workers in 22 states estimate that at least 18 million dollars worth of crops were saved from destruction by armyworms in 1953 through application of toxaphene, dieldrin, chlordane, DDT and other control measures. Records show that the outbreak in Tennessee was the worst on record and that in Indiana and South Carolina infestations were close to record highs.

Estimates on damage, crops saved and controls applied in some of the more seriously affected states include:

Arkansas: 6,000 acres treated, $140,000 in crops saved, $20,000 lost in cereal crops. Controls: Toxaphene sprays and dusts, Paris green bran baits.

Illinois: 170,000 acres treated, $1,750,000 in crops saved. Controls: Toxaphene (used in 85 per cent of control work), dieldrin dust (used in 10 per cent of work) and occasional applications of methoxychlor and chlordane.

Indiana: Over 300,000 acres treated, $6,000,000 in crops saved. Estimate $2,000,000 loss in untreated fields. Controls: Toxaphene sprays, dieldrin sprays and bran baits showed good results, chlordane sprays, fair to good, DDT ineffective.

Kentucky: Estimate 1,002,503 acres infested, 200,500 acres treated. Controls: Toxaphene, 95 per cent effective; chlordane, 90 per cent; aldrin, 95 per cent and endrin, 95 per cent. Airplane application accounted for 90 per cent of control work.

Louisiana: 25,000 acres treated, estimated $500,000 in crops saved. Controls: Toxaphene, DDT and 3–5–40 dusts plus some sprays.

Missouri: 125,000 acres treated, about $1,875,000 in crops saved. Controls: Toxaphene and DDT sprays, mostly by air, with excellent results.

Oklahoma: Estimate 3,000 acres sprayed (saving five bushels wheat per acre), 20,000 acres infested (10 per cent damage) and 1,000 acres complete loss. Overall wheat loss: 25,000 bushels. Control: Toxaphene in heavy rank growth, air application exclusively.

Pennsylvania: Estimate 15,000 acres treated. Controls: Toxaphene, chlordane and DDT sprays by air and ground units. Control termed excellent except on blue grass pastures. *to page 58*

European Corn Borer, 1953

Abundance of the European corn borer in 1953. No figures available for counties not shaded.
Borers per 100 plants
0 - 100
101 - 300
301 - 500
Over 500

Pesticide Labeling . . .

STATES	Ingredient Statement		Arsenic	Poisions
	"Name and per cent of each active ingredient and total percentage inert or name of each active and inactive and total percentage inert." Where indicated, law states that the first must be used if preparation is highly toxic to man.	"Name and percentage of each active ingredient and total per cent inert."	"Total and water soluble arsenic must be expressed as per cent of elemental arsenic."	"Any pesticide containing material in quantities highly toxic to man must bear in addition to any other required matter: skull and crossbones, 'Poison' in red on background of distinctly contrasting color, statement of antidote."
Alabama	X*		X	X
Arizona		X		
Arkansas				X
California	X*		X	
Colorado	X*		X	X
Connecticut	X		X	
Florida	X[2]		X	X
Georgia	X[3]*		X	X
Iowa[4]	X		X	
Kansas	X[5]*		X	X
Louisiana		X[6]		X
Maine[7]	X*		X	X
Maryland	X			X
Michigan	X[8]		X	X
Minnesota	X[9]*			X
Mississippi		X	X	X
Montana	X*		X	X
New Hampshire	X[10]*			
New Jersey	X[11]*		X	X
New Mexico	X*		X	X
New York	X*		X	X
North Carolina		X	X	X
North Dakota	X[12]*		X	X
Oklahoma	X*		X	
Oregon		X		X
Pennsylvania	X[13]		X[14]	
Rhode Island	X*		X	X
South Carolina[15]				
South Dakota	X*		X	
Tennessee	X[16]*		X	X
Texas	X[17]		X	
Vermont	X*		X	X
Virginia	X[18]*		X	X
Washington[19]	X[20]			X
Wisconsin	X*		X	X
Wyoming		X		

A review of specific labeling requirements in current state laws

1. Delaware, Idaho, Illinois, Indiana, Massachusetts, Mississippi, Nebraska, Nevada, Ohio and **West Virginia** have no pesticide legislation. The **Kentucky** Food, Drug and Poisons Act and the **Utah** Economic Poisons Act cover pesticides but do not provide specific information on the subjects covered.

2. Florida ingredient statement must include statement of name and percentage of each "added ingredient." In the case of household pesticides not highly toxic to man, it may name each active in descending order of predominance with name of each and total percentage inert.

3. Georgia ingredient statement. If second alternative is used names must appear in descending order of percentages in each classification and name of each must be given equal prominence. First option must also be used if arsenic is contained.

4. Iowa labeling. Law contains special regulations concerning size of type used, labels for lime sulfur solutions and a poison statement for a number of specified materials.

If the materials used are mixtures or compounds, they are to be marked as such with the names of all ingredients, beginning with the one in largest proportion, immediately following in the same size and style of type.

5. Kansas ingredient statement. Second alternative can be used only if material is not highly toxic to man and does not contain arsenic in any form and if a statement of total percentage of each active ingredient is filed.

6. Louisiana ingredient statement. The minimum percentage of each active ingredient must be expressed.

7. Maine labeling. Labeling must include such instructions for use as are necessary for protection of public health. Adequate warning and caution statements must be provided.

8. Michigan ingredient statement. The first option must be used for agricultural pesticides. Household products may show the name of each active and total percentage inert if not highly toxic to man.

9. Minnesota ingredient statement. First option only or name and percentage of each inert or statement "active ingredients 100%." First must be used if highly toxic to man.

10. New Hampshire ingredient statement. Second alternative requires only name of active with total percentage inert.

11. New Jersey ingredient statement. Second option cannot be used for materials containing arsenic in any form.

12. North Dakota ingredient statement. Second option must show names of active ingredients in order of predominance.

13. Pennsylvania ingredient statement. Second option requires only name and percentage of each inert.

14. Pennsylvania arsenic regulations. Paris green and lead arsenates are excluded.

15. South Carolina ingredient statement. For calcium arsenate the per cent arsenic pentoxide, per cent water soluble arsenic pentoxide and density in cubic inches per pound must be shown.

The correct chemical analysis of other materials must be shown on their labels. For boll weevil materials only the chemical analysis of poisonous ingredients is required.

16. Tennessee ingredient statement. Second option requires names of active ingredients to be listed in descending order of percentage.

17. Texas ingredient statement. Second option requires only name and percentage of each inactive ingredient.

Copper is to be expressed as metallic copper; if ground sulfur is present the minimum degree of fineness must be indicated and if mineral oil is present as an active ingredient a minimum guarantee of unsulfonated residues must be made.

18. Virginia ingredient statement. Second option requires that names of active ingredients be listed in descending order of percentage.

19. Washington labeling. The name and per cent of every ingredient of a poison intended or sold for use on any food crop and leaving a residue considered deleterious to health by the U. S. Food & Drug Administrator or by state officials, must be stated on label.

A list of the types of pests for which control is to be recommended must be stated on the label. A supplemental or revised list may be submitted at any time.

Special regulations govern the labeling of summer oils and fumigants.

20. Washington ingredient statement. Second option requires only name and percentage of each inert ingredient. ◆

Southern States Louisville Plant

ANOTHER Southern States Coop. plant went into operation in the late fall of 1953 and now is in full production turning out a variety of open grades at the rate of 35,000 tons per year. This unit, located at Louisville, Ky., is the fifth Southern States plant.

Covering over 49,000 square feet of floor space, the plant has a daily shipping capacity of 350 tons and employs 40 workers. Besides the production of bagged fertilizer, delivery of mixed goods is made in bulk to both trucks and box cars.

An unloading conveyor operating at 40 to 50 tons per hour has been installed so that gondola type cars and box cars can be unloaded by the under track drag. It is entirely covered by an overhead shed.

From the conveyor, materials are delivered into hoppers at the stock mill and to the seven 350-ton raw material bins. A system of four double hoppers, handling eight different materials, is located opposite the material bins. Each is equipped with a dial scale.

A two-ton Stedman mixer has been installed along with a separate tank for introduction of nitrogen solutions. The mixer discharges into an elevator which deposits the base material onto a belt conveyor system equipped with a shuttle device to permit discharge into any bin.

The 23 storage bins for finished mixed goods hold 350 tons. After curing, Payloaders transfer the material to the bagging machines, two St. Regis valve pack units. Screening is done with a Tyler Niagara unit.

A bulk loading machine is designed to pre-weigh, screen and deliver fertilizer materials to box cars or trucks. This unit is a part of the bagging station and incorporates a Weightometer to weigh materials as they pass over the conveyor belt.

All maintenance equipment is stored in a shop located at one end of the plant structure. Other buildings in the installation include an office, bag house and employee dressing room.

A two car railroad siding provides room for both incoming and outgoing shipments and a spur track permits storage of nitrogen solutions.

Grades marketed from the plant include 3–12–12, 2–12–6, 4–12–8, 0–14–14, 5–10–10 and 8–8–8 produced with muriate of potash and 4–8–12, 5–10–15 and 6–8–6 formulated with the sulfate form. ◆

Hopper system of stock mill at the new Southern States Coop. plant.

Pest Reports (*Continued from page 55*)

South Carolina: Estimate 3,000 acres treated, $190,000 in crops saved, $50,000 loss. Control: Toxaphene dust.

* * * *

Tennessee: Estimate 150,000 acres treated, $7,500,000 in crops saved. Loss on additional 150,000 acres requiring control estimated at $7,500,000. Control: Toxaphene and DDT with application primarily by air. Reported 99 per cent effective.

* * * *

The **prairie grain wireworm** is reported present in about 20 northern North Dakota counties with some losses evident in most areas. Seed treatments are recommended for infested fields.

* * * *

During 1953 the **pink bollworm** was found in 15 new counties in Arkansas, Oklahoma and Louisiana. All new infestations were extremely light and represent the least advance the pest has made into cotton-growing areas since 1949.

In Texas, results of an inspection of surface debris and bolls from standing stalks at the end of January showed only 67 per cent of bollworms alive, compared with 91 per cent at that time last year.

* * * *

The outlook for the **forest tent caterpillar** in Minnesota is termed encouraging and defoliation is expected to be less extensive this year than at any time since 1951. About six and a half million acres are expected to sustain moderate to heavy defoliation in 1954. ◆

Correction: On page 17 of the January issue it was incorrectly indicated that captan fungicide was introduced by Stauffer Chemical Co. Captan was developed by the California Spray-Chemical Corp., Richmond, Cal., in cooperation with Standard Oil of New Jersey and Rutgers University. California Spray-Chemical Corp. markets captan under the trade name Orthocide.

Endrin Effective for Bollworm and Weevil

Endrin has been found by USDA researchers to be the best insecticide tested to date against the combination of cotton bollworm and the boll weevil. The material has a longer-lasting residual action than toxaphene, the only other insecticide recommended for control of both pests.

In quantities of from 0.2 to 0.5 pound per acre it is effective against these pests and, at 0.1 to 0.2 pound, it has been found effective against other cotton pests such as thrips, leafworms, fleahoppers and lygus bugs.

Test plots at Florence, S. C., treated with endrin yielded gains in seed cotton of up to 746 pounds per acre and in Mexico endrin increased seed cotton yield 1,071 pounds per acre during a heavy boll weevil infestation.

Three New Controls for Mexican Bean Beetle

Research by USDA workers in cooperation with the North Carolina and Virginia experiment stations has shown the effectiveness of CS-708, malathion and parathion in controlling the Mexican bean beetle. These materials are being recommended this year for the first time as control measures for the beetle as either spray or dust applications.

Entomologists caution that malathion must not be applied to beans within 14 days of harvest; parathion must not be applied within 21 days of harvest for snap beans or 15 days for lima and dry beans and CS-708 should not be applied to snap beans after the pods begin to form. In addition, CS-708 should not be used on vines that are to be fed to milk animals or to meat animals being finished for slaughter.

Chlordane Boosts La. Sugarcane Yields

Cooperative field tests by USDA and the Louisiana experiment station have demonstrated that application of chlordane for control of soil insects and related pests boosts sugarcane yields through prevention of root-feeding damage.

Treated plantings in heavy soils showed an average increase in both cane and sugar production of more than 12 per cent over untreated areas. These gains were obtained by applying a one per cent dust at the rate of two to four pounds actual chlordane per acre.

Placed by hand or with a fertilizer distributor during fall planting, the material was dusted into open furrows containing cane seed pieces. Cost of chlordane and application was estimated at $4.50 per acre with the increased yields valued at about $18 per acre during the test years, 1948–52.

Tests to determine the carryover effect of applications showed even greater yield responses in the second year. Application at two and four pounds per acre upped yields 12 and nine per cent respectively the first year after treatment but 23 and 32 per cent the second year.

Pa. Recommendations for Spittlebug Control

Current Pennsylvania recommendations for the control of spittlebug in hay crops, according to Henry Menusan, Jr., include:

Wettable powders: BHC (10 per cent gamma), two pounds per acre and 40 per cent toxaphene, three pounds per acre.

Emulsion concentrates (in high or low *(Continued on page 61)*

NAC Completes Program

JUST at press time, National Agricultural Chemicals Association announced the program scheduled for the last two days of the March 24–26 meetings at The Shamrock hotel in Houston, Tex.

Business meetings for these two days remain restricted to association members and their invited guests.

Thursday's program will be opened by NAC Vice President William W. Allen of Dow Chemical Co. Allen will introduce the Honorable Roy Hofheinz, mayor of Houston.

Following the mayor's address, Lea S. Hitchner, NAC executive secretary, will make his report and Dr. H. L. Haller, Government-Industry Liaison of Washington, D. C., will present an address on technology and its broad implications for the pesticide industry.

Final speaker for the day will be J. Clyde Wilson, president, Arizona Cotton Growers Association, Phoenix, Ariz., who will relate some of his experiences with public reaction to the use of pesticides on farms. A question and answer period will follow.

During the afternoon a golf tournament will be staged at a Houston course and a "chuck wagon dinner" will be held that evening.

NAC president, Paul Mayfield, is scheduled to begin the Friday session followed by NAC counsel, John D. Conner, who will speak on the importance of proper research and production records.

Charles S. Maddock, chairman of the NAC Lawyers Committee, will point out some legal considerations in the preparation of labels, advertising and sales contracts. Some successful practical procedures in cost accounting will be presented by Wilson T. Seney, associate, McKinsey & Co., New York City.

The last address will be made by Joseph E. Burger, sales manager, Corneli Seed Co., St. Louis, Mo., who will point out some methods to develop a larger market for pesticides through better selling.

Addresses for the first day, March 24, remain as scheduled in the original program. ◆

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Literature Reviews

Fighting Our Insect Enemies —Achievements of Professional Entomology 1854-1954. Agriculture Information Bulletin No. 121. Order from Government Printing Office, Washington 25, D. C. 23 pages. Price: 15 cents.

This booklet, published in observance of the centennial of professional entomology in the U. S., gives a brief description of how entomology began in this country 100 years ago, how insects affect our food, possessions and our health and how insects are fought. A section on "Looking Ahead" tells of some entomological research projects being carried out with systemics, radioactive materials, cathode rays and radio waves.

Feed Urea in Ruminant Nutrition by Nitrogen division, Allied Chemical & Dye Corp., 40 Rector St., New York City 6. 200 page bibliography. Free to institutions conducting research in animal nutrition. Price to others: $3.

Nitrogen division says the new publication is the first comprehensive work of its kind. Its purpose is to bring together under one cover references to all the significant work conducted to date on the feeding of urea (Carbamide) as a partial protein supplement for ruminants such as cattle, sheep and goats.

Report of the Thirty-Eighth National Conference on Weights and Measures, 1953. National Bureau of Standards Miscellaneous Publication 209. Order from Government Printing Office, Washington 25, D. C. 116 pages. Price: 40 cents.

This report includes actions of the NBS conference held May 19-22, 1953 with regard to recommended methods of sale of anhydrous ammonia and other liquid chemical fertilizers with pressure characteristics.

Soil Science Simplified by Helmut Kohnke, Ph.D. Available from the author, 208 Forest Hill Drive, West Lafayette, Ind. Price: $1.00 postpaid.

"A concise textbook for those who want to get acquainted with the basic concepts of soils without poring over a multitude of details." Dr. Kohnke says the book is being used to advantage by fertilizer salesmen.

The Use of Aircraft in Agriculture in the U.S.A. Report of Organization for European Economic Co-operation. Order from OEEC's Sales and Distribution Section, 2, rue André-Pascal, Paris-16e. 108 pages. Price: $1.25.

OEEC, on the recommendation of its Food and Agriculture Committee, sent a mission of experts to this country in May-June, 1952 to study our methods for the use of aircraft in agriculture and to bring back such information to Europe. The report outlines the development of the agricultural aviation industry in the United States, describing its present organization and scope.

Pa. Recommendations

from page 59

pressure sprayers: BHC (10 per cent gamma), one quart per acre; toxaphene, about 60 per cent (six pounds per gallon), one quart and 25 per cent methoxychlor (two pounds per gallon), two quarts.

Dusts: BHC (one per cent gamma), 30 pounds per acre and five per cent toxaphene, 30 pounds.

Menusan also points out that lindane can be used at the acre rate of one pound 25 per cent wettable powder or one pint of 20 per cent emulsion.

BHC, he reports, can be applied just as nymphs are beginning to hatch and will still give control but toxaphene and methoxychlor, to be effective, must be applied after many of the bugs have hatched. One application is said to be sufficient and, when properly timed, will reduce the population 90 to 99 per cent.

Fall treatment, Menusan reports, is not so effective as spring application and is not recommended as a general practice. DDT has given best results in the fall with application required early in September to prevent adults from laying eggs.

At least 30 days should be allowed before pasturing or cutting hay from BHC or toxaphene treated fields. Forage treated with lindane is said probably to be safe for pasture two weeks after treatment and that treated with methoxychlor can be used a week after application.

From "The Control of Spittlebugs on Hay Crops," by Henry Menusan, Jr., The Penna. State Univ., Agr. Ext. Service, Circular 424, January, 1954.

CALENDAR

March 17-18—Comm. Chem. Devel. Assn. meeting, New York City.

March 22-24—Western Weed Control Conf., Tucson, Ariz.

March 24-26—NAC meeting, Houston, Tex.

March 25-26—North Central Branch, ESA, Omaha, Neb.

April 27—Assn. of Consulting Chemists & Chem. Engrs. symposium and banquet, New York City.

May 17-20—Basic Materials Exposition, Chicago.

May 23-25—CSMA mid-year meeting, Cincinnati, O.

June 3-5—Mfg. Chemists Assn. meeting and outing with SOCMA, White Sulphur Springs, W. Va.

June 10-13—APFC annual meeting, Hot Springs, Va.

June 13—Fert. Sec., Nat. Safety Council, White Sulphur Springs, W. Va.

June 14-16—NFA meeting, White Sulphur Springs, W. Va.

June 21-22—Assn. of Southern Feed and Fert. Cont. Officials, meeting, Oklahoma City, Okla.

July 1-4—Plant Food Producers of Canada, Murray Bay, Quebec.

July 8-9—Southwest Fert. Conf scheduled for July 8-9 has been moved up to July 22-23.

July 20-22—Pacific N. W. Plant Food Assn. fert. conf., Klamath Falls, Ore.

July 21-23—Beltwide Cotton Mechanization Conf., Little Rock, Ark.

Classified

For Sale: One 40 ton Sturtevant Acidulation Unit, used less than two years, with some new repair parts included. Also, a complete Fisher-Porter Automatic System for Sulfuric Acid and Water, with several new parts. This equipment is available for immediate delivery at a very attractive price. THE BUHNER FERTILIZER COMPANY, Box 152, Danville, Ill., Phone 983.

FERTILIZER MATERIALS MARKET

New York

February 10, 1954

Sulfate of Ammonia. The Government has not yet made awards for the large amount wanted for Korea. It is understood they need approximately 225,000 tons. Although supplies were heavy at Eastern points, a little better movement was reported from the West with no price changes noted.

Nitrate of Soda. No price changes were noted and stocks are available at most ports to take care of buyers' expected requirements for the entire season.

Urea. Imported material was reported a little more freely, mainly to industrial users, with most fertilizer people still waiting to cover their requirements at a later date. Recent sales were made on the basis of $120 per ton at Atlantic ports.

Nitrogenous Tankage. Present prices range from $3.50 to $4.40 ($4.25 to $5.35 per unit N), according to production point. Demand has increased recently and some producers are pretty well sold out for nearby delivery.

Castor Pomace. Because of the present low prices for this material, a greater use is noted by fertilizer manufacturers and recent sales were made on the basis of $25 per ton, f.o.b. Northern production points.

Organics. Buyers showed more interest in organic fertilizer materials because of the firmness in the market and the fact that heavy shipping for fertilizer is rapidly approaching. Feed buyers were particularly active in buying during the past week. Blood sold at $8.25 per unit of ammonia ($10.02 per unit N), f.o.b. New York, with producers sold ahead for some time. Tankage sold at $7 ($8.51 per unit N), f.o.b. Eastern shipping points. Soybean meal, after selling for as much as $76 per ton in bulk, f.o.b. Decatur, Ill. decreased to $71 for nearby shipment. Cottonseed meal remained firm. Linseed meal was quoted at $80 per ton, f.o.b. Chicago, plus $4.50 per ton for bags.

Fish Meal. Offerings were difficult to locate and most fish factories were sold out for the season. A limited amount of imported fish meal was offered. Prices for fish scrap were approximately $133 per ton, f.o.b. shipping points and fish meal was priced at $5 per ton higher.

Bone Meal. With a better demand from the feed trade, producers of bone meal were inclined to be firm in their views as to price and a possible up trend in price is expected as the fertilizer shipping season gets under way. Last sales were made at $55 per ton, f.o.b. production points.

Hoof Meal. Little change was noted in this material with last sales made at $6.75 per unit of ammonia ($8.20 per unit N), f.o.b. Chicago.

Superphosphate. While supplies of 20 per cent superphosphate are adequate at most points, triple superphosphate production has reached a new high with three new production points shipping in the past 30 days. Production from these points is expected to ease any possible shortage of this material.

Potash. While most buyers were taking delivery of material against contracts at a better rate than 30 days ago, the producers feel shipments are still lagging and behind last year. Very little imported material has arrived in the last 30 days.

Philadelphia

February 10, 1954

The raw materials market shows very gradual improvement but still cannot be described as active. Tankage and blood remain firm, and bone meal and castor pomace are receiving a little better attention. Fish scrap is more in demand. Nitrate of ammonia is closer in balance and although sulfate of ammonia shipments have improved, large stocks are still on hand at producing plants. Superphosphate is moving better, although the triple grade is not too plentiful. Potash withdrawals continue on a fairly satisfactory basis but unless the movement picks up substantially, it is feared difficulties in handling may be encountered later when the season reaches its peak. Mixed goods are moving out to the farmers, but still not fast enough.

Ammonium Nitrate. This production continues to be contracted well ahead, but withdrawals are said to have slowed down somewhat and some odd resale lots have been reported.

Sulfate of Ammonia. Contract deliveries continue to gradually improve but stocks in producers' hands still remain quite large.

Nitrate of Soda. Market remains firm with no change in prices and supply is ample.

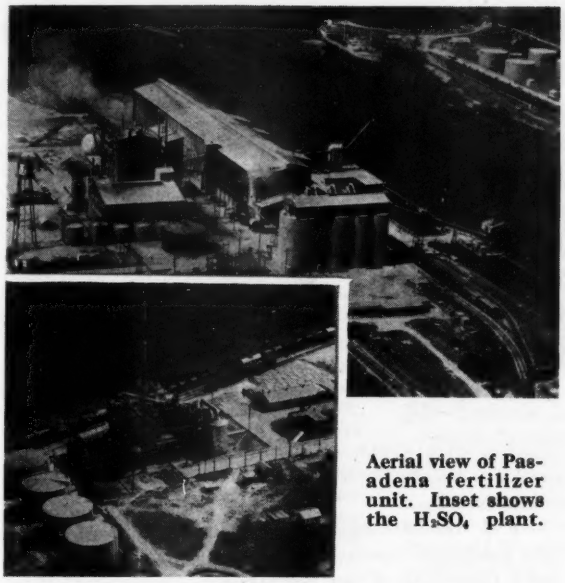
Blood, Tankage, Bone. Blood is in fair demand and priced at $8 per unit ammonia ($9.72 per unit N) here in the East, with $8.25 per unit ($10.02 per unit N) in the Chicago area. Tankage is not too plentiful and is priced at $6.75 per unit ($8.20 per unit N) in this territory and $7.75 ($9.42 per unit N) in Chicago area. Bone meal is receiving increased attention and is quoted at $55 per ton. Hoof meal is nominal at $6.75 ($8.20 per unit N), Chicago area.

Castor Pomace. This has enjoyed a little better demand and is still selling at $25 per ton.

Fish Scrap. Demand has increased and menhaden meal is now offered at $138 to $139 per ton, with scrap at $133 to $135.

Superphosphate. Still not moving out to mixers as rapidly as should be and inventories are building up. Triple grade reported not too plentiful.

Potash. Contract withdrawals continue to improve, but it is feared a bottleneck may develop when the peak of the season arrives.



Aerial view of Pasadena fertilizer unit. Inset shows the H_2SO_4 plant.

Mathieson Pasadena Units in Operation

COMMERCIAL production at the new fertilizer unit of Mathieson Chemical Corp.'s Houston (Pasadena), Tex. plant began during January, according to J. R. Beatty, Houston operations manager for the company.

The $1.1 million facility is turning out high analysis pelletized goods and its operation is expected to increase production at the Pasadena location by 25 per cent.

Largest Plant in Southwest

Beatty announced that modifications to the existing sulfuric acid plant and fertilizer works, costing slightly more than $400,000, had also been completed. The expansion, he continued, provides the Houston area with the largest chemical fertilizer plant in the Southwest and one of the largest in the country.

While the latest unit will make the regular "Ammo-Phos" grades already produced by Mathieson, some process improvements have been incorporated.

New facilities include primary Mathieson designed equipment incorporating a Jeffrey hammermill, vibrating screens from W. S. Tyler Co., elevators by Houston Belting Co. and an M. K. Griggs belt conveyor.

System May Eliminate Odors

Construction of a combination fume scrubber and burner installation is now underway and is scheduled for completion some time in April. The $200,000 system will replace the use of masking agents and is expected to eliminate fertilizer odors.

The present expansion program continues a development policy which began with Mathieson's acquisition of the Pasadena sulfuric acid and fertilizer plants in 1939. ◆

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editorial

The True Story

IN HIS article on page 41, Dr. Paul Mayfield touches on the true story of farm chemicals. He refers to the fact that "hysterical and unwarranted charges are made about 'chemicals poisoning food'" and states that, unless the truth is told, progress in educating the farmer may be seriously impaired.

Both the fertilizer and pesticide segments of our industry are subjects of these statements. During the past few years some national publications have seemingly found it profitable to publish "exposes" of the health hazards of pesticides and chemical fertilizers, material which in many instances could only serve to misinform the consumer on the values of farm chemicals.

In addition there are the publications of alarmists such as the publishers of organic cult magazines which, although limited in circulation, must have some effect on the public.

Through publicity of this nature there exists a definite threat that farm chemicals will be, to some degree, discredited in the eyes of the public.

What are these untruths and half-truths that are being circulated? We all know these fantastic tales —pesticides are poisons and therefore causes of disease and ill health; when organic fertilizers are used, pesticides are not required; look at the deaths that have occurred because of contact with pesticide treated foods, etc.

WE MIGHT at this point consider for just a moment the sad story of dichlorodifluorotrichlorobenzene—DDT, the most maligned of farm chemicals. One of the prime arguments voiced again and again by the organic faddists goes something like this—"DDT-can-be-absorbed-and-excreted-by-cattle, it-gets-into-milk-causing-sickness-and-death."

This old refrain totally ignores USDA's prompt action in restricting recommendations for use of DDT when the facts about absorption became known. Also ignored are the lives which this wonderful chemical has saved, the malarial areas which have been cleaned up through its use, the other contributions which DDT has made and is making toward improving the food supply and bettering living conditions of people throughout the world.

Chemical fertilizers are the subject of very similar attacks—they are not "natural" materials; they are made with corrosive acids that poison the soil; crops grown with them are more attractive to insects and plant disease; crops on which chemical fertilizers are used are less nutritious than those grown with natural materials.

All of these statements, referring to both fertilizers and pesticides have been effectively refuted by the most reputable of our scientists.

Members of the industry are familiar with these claims and with the facts, but how many farmers and consumers have really been told the truth? How many have been properly informed about either chemical fertilizers or pesticides? How many members of the industry have made a real effort to see that people in their area are made aware of the tremendous contributions being made by farm chemicals both on the farm and in the home?

IT WOULD seem that the time has arrived to give serious consideration to the problem involved—the efforts which should be made to present the story of farm chemicals.

To avoid the possible deleterious effects of misinformation we can tell, as an industry or as individual organizations, about the bigger and better crops which have been made possible; the crops which have been saved from destruction; the lives which have been saved; the land reclaimed from weed infestations and all of the other contributions which have been made by farm chemicals.

Of perhaps equal importance is publicizing the time, work and finances required to develop a new chemical, the research and development, painstaking testing and other factors involved before a pesticide can be marketed.

The public should be made familiar with governmental controls which are formulated and exercised to assure safe use of chemicals.

The facts are available; it remains only to place them where they are needed—where they will be seen, read and heard by the farmer and consumer.

Surely a well developed program could enlist the cooperation of Federal and state workers, vo-ag teachers, farm and garden editors, newspapers and other public information sources in addition to industry facilities.

Why delay until this unfortunate publicity finds increasing acceptance? We suggest that action be taken to tell the story—the true story of farm chemicals.

—GEO. P. TEEL, JR.

68—Pyrethrum Dust Base

According to the manufacturer, Prentiss Drug & Chem. Co., Prentox Pyronyl represents the first time that a high concentration of pyrethrum has been offered on an economical basis. The material is a synergized dust concentrate, an economical base for formulation of truck crop and home garden pesticides. Technical literature is available.

CIRCLE 68 ON SERVICE CARD

69—Michigan Fact Folio

A file of specifications and action photographs on the complete Michigan tractor shovel line of Clark Equipment Co.'s Construction Machinery division is available. The company claims that its units are faster, heavier and have more horsepower than any tractor shovels of comparable capacity. Six models are produced, each offering four speeds forward and four reverse, short turning radius, low level bucket tip-back, gasoline or diesel power and hydraulic steering booster. For your copy of the Fact-Folio

CIRCLE 69 ON SERVICE CARD

70—Ammonium Sulfate

Additional capacity of Republic Steel Corp. facilities has made available more top-quality ammonium sulfate. The material is available in bulk or bagged, ready for prompt shipment in carload lots and at regular intervals. Write for information.

CIRCLE 70 ON SERVICE CARD

71—Better Valve Closures

Kraft-lok bags from Kraft Bag Co. fill better and cleaner and close both tighter and faster than similar units without the use of extra valve attachments or inserts. Kraft says that users report definite dollar savings from production and packaging efficiency. Additional data are available on this new valve closure.

CIRCLE 71 ON SERVICE CARD

72—Fur-Ag Conditioner

According to Quaker Oats Co. its Fur-Ag organic conditioner is inexpensive, speeds up fertilizer curing, prevents caking and provides bulk. The material is sterilized and available in volume throughout the year. Write for more information on this Furfural residue which is now used by many leading fertilizer companies.

CIRCLE 72 ON SERVICE CARD

73—Siftproof Sealer

A sift-proof sealer for heavyweight paper bags is made by George H. Fry Co. The company says its machine automatically makes a double-folded, sift-proof heat seal in the top of any heavy weight paper bag. The first fold is securely heat sealed; the second is glued for extra safety. Available in various models, the machine is perfect for granular or fine products. For more information

CIRCLE 73 ON SERVICE CARD

FREE INFORMATION to help you solve fertilizer, pesticide problems

Reader Service

74—Smirow Tankage

Smirow Tankage is 100 per cent organic and runs consistently high in water insolubility and availability. The Smith-Rowland Co. product is uniform in color and texture. Organic nitrogen, points out the manufacturer, assures top quality in farm mixes. For prices

CIRCLE 74 ON SERVICE CARD

75—Steel Drums & Pails

Steel drums for the southern trade are produced by Vulcan Steel Container Co. The company specializes in serving a large capacity and flexibility of production, and a sizable warehouse stock of popular sizes and types of steel pails. For prices and samples

CIRCLE 75 ON SERVICE CARD

How to use the

READER SERVICE CARD

- **Circle number of literature you want.**
- **Print your name, position, company and address.**
- **Clip and mail the Service Card.**

76—Sinox Formulations

The four special formulations of Sinox have been produced by Standard Agricultural Chemicals, Inc., through 16 years of research and development. The company will send prices, marketing agreement and other information if you will

CIRCLE 76 ON SERVICE CARD

77—Pelletized Montansalpeter

Montansalpeter, ammonium sulfate nitrate, is available through H. J. Baker & Bro. The material contains 26 per cent nitrogen with 19.5 per cent in ammonia form and 6.5 per cent as nitrate. It is pelletized and properly sized for flow, ready for application, available f.o.b. all regular Atlantic and Gulf ports and is shipped to the trade in bags. For further information

CIRCLE 77 ON SERVICE CARD

78—Fert. Equipment Book

A fertilizer plant and equipment book from Link-Belt Co. shows the latest in processing and handling equipment. The 16-page booklet is illustrated with flow sheets, detailing the Link-Belt service for responsibility in design, equipment and erection of complete plants. To obtain a copy

CIRCLE 78 ON SERVICE CARD

79—Strobane Available

Strobane for use in liquid and aerosol household insecticide sprays is available from B. F. Goodrich Chem. Co. The new material offers high efficiency against the common insects, is safe to use, requires no secondary aromatic solvents, has a pleasant odor, leaves no visible residue and is easy to formulate. Technical information is available.

CIRCLE 79 ON SERVICE CARD

80—Power-Curve Folder

Power-Curve Conveyor Co. has issued a small folder with a three-minute story on its answers to bag handling problems. The booklet reviews briefly the Power-Curve box-car and truck loader, bag flatteners, packer-conveyor and elevator-flattener-loader. The company claims that through the use of endless spring belts and grooved rollers the job is done better than with other types because its products save time, labor and space. For a copy of the folder

CIRCLE 80 ON SERVICE CARD

81—Ammonia Leak Detector

A pocket-size device for detecting ammonia leaks is available without charge from the Nitrogen division, Allied Chem. & Dye Corp. It consists of Sulfstix, long sulfur impregnated tapers, in a container designed to be carried or hung on the wall near ammonia equipment. Leaks are detected by lighting a taper near the suspected equipment. A white cloud indicates point of leakage.

CIRCLE 81 ON SERVICE CARD

82—Bag Closer Catalog

A 16-page illustrated booklet is available from Union Special Machine Co. The booklet shows how to select quickly the right bag closing machine for the job. Contains complete data on sewing heads, columns, conveyors, plus more than 50 illustrations. For a copy

CIRCLE 82 ON SERVICE CARD

83—Conditioner & Diluent

Aquafil from the Aquafil Co. is used as a conditioning agent for mixed fertilizers, a diluent for insecticides and as a covering agent for ammonium nitrate. The manufacturer claims that the amorphous diatomaceous silica is the product stabilizer which ends bag caking of fertilizers. For information

CIRCLE 83 ON SERVICE CARD

84—V-C Multiwalls

Multiwall bags from Virginia-Carolina Chem. Corp. are available in two to six plys with printing in one to four colors. V-C assets in the multiwall field include over 50 years of experience, manufacturing skill, top grade materials and close inspection of products. Write for full information.

CIRCLE 84 ON SERVICE CARD

85—New SO_2 Detector

Mine Safety Appliances Co. has introduced a Sulfur Dioxide Gas Detector, an accurate portable instrument for determining gas concentrations of 0 to 50 ppm in the atmosphere. A reagent in the tester tube turns from blue to white and the length of decolorization is directly proportional to the percentage of sulfur dioxide in the air sample. Details available.

CIRCLE 85 ON SERVICE CARD

86—Diluex Specifications

Diluex and Diluex A from the Floridin Co. are both widely accepted as grinding aids for technical grade toxicants and, according to the producer, discharge readily from dust applicators to provide uniform coverage and minimum fractionization to toxicant and carrier in the swath. They possess a large adsorption capacity in liquid impregnation procedures. For complete specifications

CIRCLE 86 ON SERVICE CARD

87—For Bag Appeal

Chase Bag Co. says its 107 years of experience in producing multiwall bags gives users many extras—better appearance, clean printing, sales appeal and good product protection. For additional information

CIRCLE 87 ON SERVICE CARD

88—Elevator Chains Won't Break

Chabelco S-856 and S-858 chains made by Chain Belt Co. are designed especially for bucket elevator service and, when properly applied, won't break. The company claims that, with the extra-large bearing areas, the new chains will outlast and outwear any other chain. For a copy of Chain Belt's latest bulletin

CIRCLE 88 ON SERVICE CARD

89—Sell More Low-Vol Brush Killers

As a basic producer of low-vol brush killers, Pittsburgh Coke & Chem. Co. offers top quality and fast delivery service. The company points out that a powerful sales program provides maximum assurance of healthy sales and profits. Maximum protection from drift hazards is obtained through the new, improved low-vol isocytl esters. For the complete story

CIRCLE 89 ON SERVICE CARD

90—New Screen Hammer Pulverizer

A new line of screen hammer-type pulverizers has been introduced by the Raymond division, Combustion Engineering. Designed for medium fine grinding, the Ray-Ducer is available in three sizes and a wide range of capacities. The pulverizers are of compact design with easy accessibility for inspection, maintenance or screen changes. A bulletin describes the new units in greater detail.

CIRCLE 90 ON SERVICE CARD

How to use the
READER SERVICE CARD

- **Circle number of literature you want.**
- **Print your name, position, company and address.**
- **Clip and mail the Service Card.**

91—B-Flex Bags

B-Flex multiwall bags from Bemis Bro. Bag Co. offer lower bag costs, faster production, uniform weights, minimum sifting and customer satisfaction. As with all Bemis products, multi-color printing is available. For complete details

CIRCLE 91 ON SERVICE CARD

92—Hisolv Solvents

Hisolv Heavy Naphthas from Penna. Industrial Chem. Corp. contain methyl naphthelenes and have good solvency for pesticides such as DDT, 2, 4-D esters and chlorinated camphene. They are also useful vehicles for wood preservatives. For complete specifications

CIRCLE 92 ON SERVICE CARD

93—NH_3 Tanks

Charlotte Tank Co. Duo-Tested anhydrous ammonia tanks are available in 300, 500 and 1,000 gal. capacities for storage or 100 and 150 gal. applicator sizes. Features include all steel welded construction and steel fittings. Skid and truck tanks are also available. Details and prices are available.

CIRCLE 93 ON SERVICE CARD

94—Munson Mixers

Rotary batch mixers produced by Munson Mill Machinery Co. feature a seven-way mixing action and have low horsepower requirements and operating costs. Available in capacities from 40 to 200 cu. ft. the mixers empty completely after every batch and can be obtained for working floor, overhead or basement installation. They can be fitted with internal spray for introduction of limited amounts of liquid. For information

CIRCLE 94 ON SERVICE CARD

95—Tech. Data on NH_3

Anhydrous ammonia is the subject of the latest in a technical data series from Commercial Solvents Corp. The four-page folder covers specifications, physical properties, uses, shipping, handling and storage, toxicity. Included is a full page of tables concerning physical properties. To obtain a copy

CIRCLE 95 ON SERVICE CARD

96—Shell's Aldrin

Shell Chemical Corp. points out that aldrin is backed by both state and Federal recommendations, excellent technical service and a comprehensive advertising campaign. It makes up readily into emulsifiable concentrates, dust, wettable powder and granular formulations. For technical literature and sales information

CIRCLE 96 ON SERVICE CARD

97—Captan Fungicide

Captan fungicide is available from Stauffer Chemical Co. The material has been thoroughly tested on many crops and is recommended for various fruits and vegetables. For the latest information on Stauffer's product

CIRCLE 97 ON SERVICE CARD

98—Heptachlor

If the alfalfa weevil is a problem in your area look into heptachlor, produced by Velsicol Corp. We do not have a great deal of information on the product, but a folder with complete details is available. For a copy

CIRCLE 98 ON SERVICE CARD

99—MH-40 in Grass Control

A small folder from Naugatuck Chem. division provides information on MH-40, what it is, advantages of use, how it is used and applied and application rates for use in retarding grass growth.

CIRCLE 99 ON SERVICE CARD

100—Fire Protection

Foam fire protection is covered in a new booklet produced by National Foam System. In question and answer style it tells what foam is, how it works, where it is used and what foam devices are used for. To obtain a copy of the 16-page, liberally illustrated booklet

CIRCLE 100 ON SERVICE CARD

Buyers' Guide

Classified Index to Advertisers in 'Farm Chemicals'

ALDRIN
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.
Shell Chemical Co., Agr. Chem. Div., Denver, Colo.

AMMONIA—Anhydrous and Liquor
Commercial Solvents Corporation, New York City
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Lion Oil Co., El Dorado, Ark.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM NITRATE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Commercial Solvents Corporation, New York City
Lion Oil Co., El Dorado, Ark.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

AMMONIUM PHOSPHATE
Monsanto Chem. Co., St. Louis, Mo.

AMMONIUM SULFATE
See Sulfate of Ammonia

AMMONIUM SULFATE NITRATE
Baker & Bro., H. J., New York City

BAGS—Multiwall-Paper
International Paper Co., Bagpak Div., N. Y. C.
Hammond Bag & Paper Co., Wellsburg, W. Va.
Hudson Pulp & Paper Corp., N. Y. C.
Kraft Bag Corporation, New York City
Raymond Bag Co., Middletown, Ohio
Union Bag & Paper Corp., New York City

BAGS—Dealers and Brokers
Ashcraft-Wilkinson Co., Atlanta, Ga.

BAG CLOSING MACHINES
Fischbein Co., Dave, Minneapolis, Minn.
International Paper Co., Bagpak Div., N. Y. C.

BAG PRINTING MACHINES
Schmutz Mfg., Louisville, Ky.

BAG FILLING MACHINES
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

BHC AND LINDANE
Ashcraft-Wilkinson Co., Atlanta, Ga..
Diamond Alkali Co., Newark, N. J.
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

BONE PRODUCTS
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

BORAX AND BORIC ACID
Woodward & Dickerson, Inc., Philadelphia, Pa.

BROKERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
Woodward & Dickerson, Inc., Philadelphia, Pa.

BUCKETS—Hoist, Crane, etc.
Hayward Company, The, New York City

CALCIUM ARSENATE
American Agricultural Chemical Co., N. Y. C.

CARS AND CART
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

CASTOR POMACE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City

CHEMISTS AND ASSAYERS
Shuey & Co., Inc., Savannah, Ga.
Wiley & Company, Baltimore, Md.

CHLORDANE
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

CLAY
Ashcraft-Wilkinson Co., Atlanta, Ga.

CONDITIONERS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Jackle, Frank R., New York City
Keim, Samuel D., Philadelphia, Pa.
National Lime & Stone Co., Findlay, Ohio

CONTROL SYSTEMS
Sackett & Sons Co., The A. J., Baltimore, Md.

CONVEYORS—Belt
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.

COPPER SULFATE
Tennessee Corp., Atlanta, Ga.

COTTONSEED PRODUCTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa

DDT
Ashcraft-Wilkinson Co., Atlanta, Ga.
Diamond Alkali Co., Newark, N. J.
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

DIELDRIN
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.
Shell Chem. Corp., Agr. Chem. Div., Denver, Colo.

DILUENTS
Ashcraft-Wilkinson Co., Atlanta, Ga.
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.
Summit Mining Corporation, Carlisle, Pa.

DITHIOCARBAMATES
Berkshire Chemicals, New York City

DRYERS
Sackett & Sons Co., The A. J., Baltimore, Md.

ELEVATORS—Bucket
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

EMULSIFIERS
Atlas Powder Co., Wilmington, Del.

ENGINEERS—Chemical and Industrial
Chemical Construction Corp., New York City
Fairlie, Inc., Andrew M., New York City
General Industrial Development Corp., N. Y. C.
Marietta Concrete Corporation, Marietta, Ohio
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.
Titlestad Corporation, Nicolay, New York City

FERTILIZER—Mixed
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Davison Chemical Corporation, Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Mathieson Agricultural Chemicals Co., Little Rock Ark.

FILLERS
Bradley & Baker, N. Y. C.

FISH SCRAP AND OIL
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

FULLER'S EARTH
Ashcraft-Wilkinson Co., Atlanta, Ga.

FUNGICIDES
American Agricultural Chemical Co., N. Y. C.
Berkshire Chemicals, New York City
Tennessee Corp., Atlanta, Ga.

HERBICIDES
Diamond Alkali Co., Newark, N. J.
Lion Oil Company, El Dorado, Ark.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

HERBICIDES—Oils
Lion Oil Company, El Dorado, Ark.

HOPPERS & SPOUTS
Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind..

IMPORTERS, EXPORTERS
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Berkshire Chemicals, New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

INSECTICIDES
American Agricultural Chemical Co., N. Y. C.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Berkshire Chemicals, New York City
Diamond Alkali Co., Newark, N. J.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.
Shell Chem. Corp., Agr. Chem. Div., Denver, Colo.
U. S. Industrial Chemicals Co., New York City

IRON SULFATE
Tennessee Corp., Atlanta, Ga.

LEAD ARSENATE
American Agricultural Chemical Co., N. Y. C.

LIMESTONE
American Agricultural Chemical Co., N. Y. C.
Ashcraft-Wilkinson Co., Atlanta, Ga.
National Lime & Stone Co., Findlay, Ohio

LOADERS—Car and Wagon
Sackett & Sons Co., The A. J., Baltimore, Md.

Buyers' Guide

MACHINERY—Acid Making and Handling

Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Acidulating

Chemical Construction Corp., New York City
Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Ammoniating

Sackett & Sons Co., The A. J., Baltimore, Md.

MACHINERY—Grinding and Pulverizing

Atlanta Utility Works, The, East Point, Ga.
Bradley Pulverizer Co., Allentown, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Material Handling

Atlanta Utility Works, The, East Point, Ga.
Clark Equipt. Co., Construction Mach. Div., Benton Harbor, Mich.
Hayward Company, The, New York City
Hough, The Frank G. Co., Libertyville, Ill.
Lessman Mfg. Co., Des Moines, Ia.
Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Mixing, Screening and Bagging

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY—Power Transmission

Link-Belt Co., Chicago, Ill.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MACHINERY

Superphosphate Manufacturing

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

MAGNESIUM SULFATE

Berkshire Chemicals, New York City

MANGANESE SULFATE

Tennessee Corp., Atlanta, Ga.

MANURE SALTS

Potash Co. of America, Washington, D. C.

MINOR ELEMENTS

Tennessee Corporation, Atlanta, Ga.

MIXERS

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

NITRATE OF POTASH

Berkshire Chemicals, New York City

NITRATE OF SODA

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
International Min. & Chem. Corp., Chicago, Ill.
Woodward & Dickerson, Inc., Philadelphia, Pa.

NITROGEN SOLUTIONS

Commercial Solvents Corporation, New York City
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Lion Oil Company, El Dorado, Ark.
Phillips Chemical Co., Bartlesville, Okla.
Spencer Chemical Co., Kansas City, Mo.

NITROGEN MATERIALS—Organic

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

NOZZLES—Spray

Monarch Mfg. Works, Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

PARATHION

Ashcraft-Wilkinson Co., Atlanta, Ga.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

PENTACHLOROPHENOL

Monsanto Chemical Co., St. Louis, Mo.

PHOSPHATE ROCK

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Woodward & Dickerson, Inc., Philadelphia, Pa.

PHOSPHORIC ACID

American Agricultural Chemical Co., N. Y. C.
Monsanto Chemical Co., St. Louis, Mo.

PLANT CONSTRUCTION—Fertilizer and Acid

Atlanta Utility Works, The, East Point, Ga.
Chemical Construction Corp., New York City
General Industrial Development Corp., N. Y. C.
Monsanto Chemical Co., St. Louis, Mo.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.
Titlestad Corporation Nicolay, New York City

POTASH—Muriate

American Potash & Chemical Corp., N. Y. C.
Ashcraft-Wilkinson Co., (Duval Potash) Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Duval Sulphur & Potash Co., Houston, Tex.
International Min. & Chem. Corp., Chicago, Ill.
Potash Co. of America, Washington, D. C.
Southwest Potash Corporation, New York City
United States Potash Co., N. Y. C.

POTASH—Sulfate

American Potash & Chemical Corp., N. Y. C.
Baker & Bro., H. J., New York City
International Min. & Chem. Corp., Chicago, Ill.
Potash Co. of America, Washington, D. C.

POTASSIUM PHOSPHATE

Monsanto Chemical Co., St. Louis, Mo.

PRINTING PRESSES—Bag

Schmutz Mfg. Co., Louisville, Ky.

PYROPHYLLITE

Ashcraft-Wilkinson Co., Atlanta, Ga.
Pioneer Pyrophyllite Producers, Beverly Hills, Calif.

REPAIR PARTS AND CASTINGS

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

SACKING UNITS

Sackett & Sons Co., The A. J., Baltimore, Md.

SCALES—Including Automatic Baggers

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

SCREENS

Atlanta Utility Works, The, East Point, Ga.
Sackett & Sons Co., The A. J., Baltimore, Md.
Stedman Foundry and Machine Co., Aurora, Ind.

SEPARATORS—Air

Sackett & Sons Co., The A. J., Baltimore, Md.

SPRAYS

Monarch Mfg. Works, Inc., Philadelphia, Pa.
Spraying Systems Co., Bellwood, Ill.

STORAGE BUILDINGS

Butler Manufacturing Co., Kansas City, Mo.
Marietta Concrete Corporation, Marietta, Ohio

SULFATE OF AMMONIA

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
Lion Oil Co., El Dorado, Ark.
Mathieson Agricultural Chem'ls Co., Little Rock, Ark.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C.
Phillips Chemical Co., Bartlesville, Okla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFATE OF POTASH—MAGNESIA

International Min. & Chem. Corp., Chicago, Ill.

SULFUR

Ashcraft-Wilkinson Co., Atlanta, Ga.
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
Texas Gulf Sulphur Co., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

SULFUR—Dusting & Spraying

Ashcraft-Wilkinson Co., Atlanta, Ga.
U. S. Phosphoric Products Div., Tennessee Corp., Tampa, Fla.

SULFURIC ACID

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Lion Oil Company, El Dorado, Ark.
Monsanto Chemical Co., St. Louis, Mo.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.

SUPERPHOSPHATE

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Davison Chemical Corporation, Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
Mathieson Agricultural Chemicals Co., Little Rock, Ark.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

SUPERPHOSPHATE—Concentrated

Armour Fertilizer Works, Atlanta, Ga.
Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TALC

Ashcraft-Wilkinson Co., Atlanta, Ga.

TANKAGE

American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

TEPP

Monsanto Chemical Co., St. Louis, Mo.

TOXAPHENE

Ashcraft-Wilkinson Co., Atlanta, Ga.
Pittsburgh Coke & Chem. Co., Agr., Chem. Div., Pittsburgh, Pa.

2, 4-D

Diamond Alkali Co., Newark, N. J.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

2, 4, 5-T

Diamond Alkali Co., Newark, N. J.
Monsanto Chemical Co., St. Louis, Mo.
Pittsburgh Coke & Chem. Co., Agr. Chem. Div., Pittsburgh, Pa.

UREA & UREA PRODUCTS

Baker & Bro., H. J., New York City
Bradley & Baker, N. Y. C.
Nitrogen Div., Allied Chemical & Dye Corp., N.Y.C

VALVES

Atlanta Utility Works, The, East Point, Ga.
Monarch Mfg. Works, Inc., Philadelphia, Pa.
Sackett & Sons Co., The A. J., Baltimore, Md.

ZINC SULFATE

Tennessee Corp., Atlanta, Ga.

DDT BHC

DIAMOND

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- LINDANE
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- 2, 4, 5-T Brush Killers
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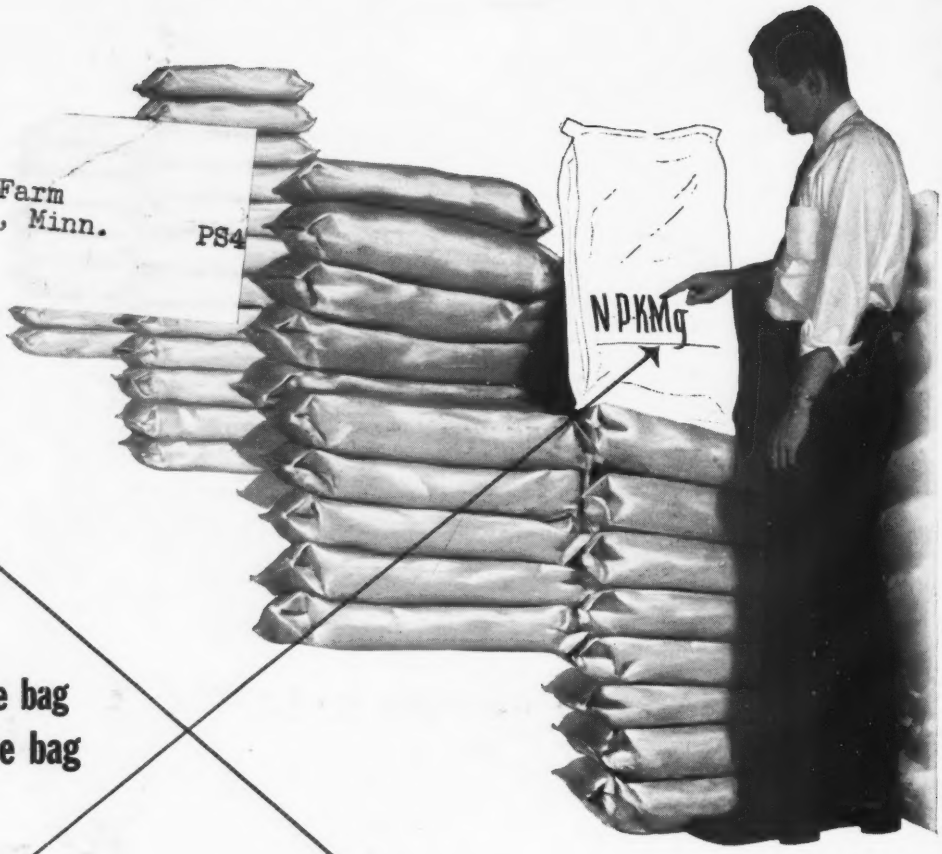

on

put it in the bag
put it on the bag

in

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WATER-SOLUBLE ($K_2SO_4 \cdot 2MgSO_4$)
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Mined and Refined at Carlsbad by International for Fertilizer Manufacturers

Potash Division

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

General Offices: 20 North Wacker Drive, Chicago 6